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THE JOURNAL

OF THE

American Medical Association

Annual Subscription, $5.00 | PUBLISHED WEEKLY | Single Copies, 20 Cents

VOLUME 91, No. 10 | 535 North Dearborn Street, CHICAGO, ILL. | SEPTEMBER 8, 1928

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized on June 14, 1918. If undeliverable, return postage is guaranteed

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SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "MI," Medicolegal; "ME," Medical Economics.

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 91, No. 10 CHICAGO, ILLINOIS SEPTEMBER 8, 1928

ANEMIA AND OTHER BLOOD CHANGES IN SYPHILIS *

CLYDE L. CUMMER, M.D.

CLEVELAND

Although anemia is recognized as a frequent, possibly constant, feature of the cachexia of late syphilis, a general exposition of the blood disorders due to this infection is not readily available. As Eason [1] remarked, there has been little change in view in the quarter century regarding the anemia of syphilis, while our conception of aortitis has changed greatly.

In this communication, my purpose is to present a brief review of the present opinion as it may be gleaned from the literature, at the same time reporting certain personal observations:

Fournier distinguished the following types: (1) simple anemia, characterized by a diminution in the number of red cells and a proportional reduction in the hemoglobin; (2) chlorotic anemia, with a greater reduction in the hemoglobin than in the red cells; (3) chlorotic anemia with leukocytosis; (4) anemia of pernicious type, and (5) leukemic type. The first three types were evidently seen more frequently in secondary syphilis, judging from the cases cited.

For our convenience in discussion, however, the anemias will be divided as follows:

1. The anemia of early constitutional syphilis.
2. The anemia of late syphilis.
   (*a*) With the blood changes ordinarily found in pernicious anemia.
   (*b*) With the blood changes ordinarily found in any secondary anemia.
      (1) Without splenomegaly.
      (2) With splenomegaly.
3. Leukemia.
4. Hemolytic anemia of paroxysmal hemoglobinuria.

Grassi [2] is credited with the first accurate observations on the erythrocytes in early syphilis in 1858. Working at the instigation of Ricord [3] at the Hôtel Dieu, he found a diminution in the erythrocytes, especially marked in women. This was confirmed by Wilbouchewitch.[4]

Jellenew,[5] conducting an investigation for Stoukovenkoff,[6] on twenty patients in different stages of the disease, concluded that the red and white counts and the amount of hemoglobin were modified even before the appearance of the eruption, that in the period of the syphilodermas the hemoglobin and the red cells diminish while the white cells increase, and that when the cutaneous eruption disappears the percentage of hemoglobin eventually returns to normal. Monod's [7] results were similar. The early literature was reviewed by Zeisler.[8]

Stokes [9] thought that women became anemic more frequently than men, and that drops of 20 per cent in hemoglobin were not infrequent; the anemia was usually of secondary type.

In the Department of Skin and Syphilis of the Dispensary of Charity Hospital, I have examined forty consecutive cases of early (i. e., primary or secondary) syphilis. The results are presented in table 1. In a few instances, one injection of arsphenamine had been given before the blood was counted. In all cases the diagnosis was corroborated by demonstration of *Spirochaeta pallida* or by a positive Wassermann reaction with one exception, in which the diagnosis of secondary syphilis was unquestionable.

It is obvious that no anemia was present in 75 per cent of the males with secondary syphilis, and that in the remainder the hemoglobin content could not be said to be strikingly reduced. The average for the males was 97.2 per cent. The larger percentage of the female patients showed hemoglobin between 70 and 89 per cent, the average being 82.3 per cent, not including the two whose hemoglobin was below 70 per cent, in whom the anemia might be explained by other causes.

That the anemia was of the secondary type is shown by typical blood counts given in table 2.

The recovery in hemoglobin is demonstrated in table 3, which summarizes the results of therapy in patients whose hemoglobin was diminished and on whom repeated observations were possible.

Eason states that in the anemia of secondary syphilis a number of cases have shown a severe degree of oligocythemia and also poikilocytosis and punctate basophilia, as well as normoblasts and megaloblasts. Eosinophilic and neutrophilic myelocytes were found in fair number in one case. Enlargement of the spleen was found in all cases.

In regard to the effect on the leukocyte count, Hazen [10] found that in untreated cases of secondary syphilis there was a slight leukocytosis, an occasional patient showing as many as 20,000 leukocytes per cubic millimeter; that severe cases showed a higher total count and a higher relative and actual neutrophil count than do milder

* From the Department of Dermatology and Syphilis of the Charity Hospital.

* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Eason, J.: Edinburgh M. J. **21**: 258-267 (Nov.) 1918; Brit. M. J. **2**: 186-188 (Aug. 6) 1921; J. Path. & Bact. **11**: 167-202, 1906.
2. Grassi, quoted by Ricord: Leçons sur le chancre, Paris, 1858, p. 143.
3. Ricord, Phillippe: Leçons sur le chancre, 1860.
4. Wilbouchewitch: Arch. de physiol. **1**: 509-537, 1874.
5. Jellenew, referred to by Stoukovenkoff in Zeisler's article (footnote 8).
6. Stoukovenkoff: Ann. de dermat. et syph. **3**: 924-930, 1893.
7. Monod, Jacques: De l'anémie syphilitique, Paris, 1900.
8. Zeisler, J.: Morrow's System Genito-Urinary Diseases **2**: 110, 1894.
9. Stokes, J. H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1926.
10. Hazen, H. H.: J. Cutan. Dis. **31**: 618, 739, 1913.

cases. He felt that patients showing a high neutrophil and low lymphocyte count did not do so well under treatment as those showing the reverse.

ANEMIA OF LATE SYPHILIS, PERNICIOUS TYPE

Since the cause of pernicious anemia is unknown and it is within the range of possibility that the clinical picture may be produced by more than a single cause, it was only natural that syphilis should be suspected. Can it not produce blood changes indistinguishable from pernicious anemia as do pregnancy and *Bothriocephalus* infestation?

TABLE 1.—*Hemoglobin Determinations*

Primary Syphilis (Four Cases)	Number of Cases	
Hemoglobin	Male	Female
90 per cent or more	4	0
Below 90 per cent	0	0
Secondary Syphilis (Thirty-Six Cases)		
90 per cent or more	18	1
80 to 89 per cent	6	5
70 to 79 per cent	0	2*
Below 60 per cent	0	0

* In the two patients whose hemoglobin was below 69 per cent, other factors (pregnancy, rectal bleeding) could be advanced as possible causes.

Earlier reports of improvement under antisyphilitic treatment, when the blood observations of pernicious anemia were associated with a syphilitic history, were summarized by Labbé and Chaillons.[11] When arsphenamine was introduced, it was tried in cases of pernicious anemia by Bramwell,[12] Maynard,[13] Hobhouse,[14] Friedlander,[15] Leede,[16] Boggs[17] and others. The early reports aid us little since there was no clear indication of permanently beneficial effect on the one hand or of the constant and indubitable relationship of syphilis on the other. Indeed, in many of these cases there was no reason to suspect syphilis.

Foucar and Stokes[18] studied all the instances of severe anemia, twenty-five, in 4,800 records in the Section on Dermatology and Syphilology in the Mayo Clinic. While pernicious anemia may be seen in association with late or latent syphilis, no case exhibiting an incontestable etiologic connection was seen by them.

TABLE 2.—*Complete Counts When Hemoglobin was Reduced. Secondary Syphilis; Wassermann Reaction ++++ in All Cases*

Patient	Sex*	Hemoglobin	Red Blood Cells per C.Mm.	Color Index	White Blood Cells per C.Mm.	Polymorphonuclear Neutrophils	Small Mononuclears	Large Mononuclears	Transitionals	Eosinophils	Mast Cells
F. P.	♀	72	5,448,000	0.66	6,200	58.0	34.0	3.0	3.0	3.0	0
M. H.	♀	65	4,544,000	0.72	5,800	42.0	48.0	3.0	6.0	1.0	0†
R. L. C.	♀	75	4,664,000	0.77	7,300	50.0	35.0	7.0	7.0	1.0	0
M. C.	♀	77	5,528,000	0.77	6,600	57.0	34.0	5.0	3.0	0.0	1.0
I. W.	♀	65	3,752,000	0.86	12,500	58.0	30.0	2.0	4.0	5.4	0‡
J. S.	♂	80	4,348,000	0.93	6,300						

* In the tables, ♂ indicates male; ♀, female.
† Rectal bleeding.
‡ Pregnant.

Von Winterfeld[19] of Curschmann's clinic reviewed critically the reported cases in 1913 and came to the conclusion that in no single case was there proof of a causative relationship between syphilis and pernicious anemia. He felt that syphilis might increase the disposition to illness in a body already exposed to it and hasten the course of an illness which it cannot in itself produce.

The problem was viewed from another angle by Levine and Ladd,[20] who studied 141 cases of pernicious anemia at the Peter Bent Brigham Hospital. Wassermann reactions were positive in only six patients (4.3 per cent), while the average incidence of positive reactions in the same hospital had been found to be 15 per cent by Walker and Haller.[21] In spite of intravenous treatment for syphilis, three of the six patients showing positive reactions died. Levine and Ladd felt that treatment could not have been said to change the course of the disease in the other three patients since the periods of observation, which ranged from six months to four and one-half years, were not long enough to give final evidence of the beneficial effect of antisyphilitic treatment.

Hoff,[22] working under the direction of Hoppe-Seyler, reported six cases of the pernicious type of anemia. In all, necropsy revealed evidence of syphilis in the aorta or the nervous system. The patients were in such grave condition that therapy could not be given a fair trial. He felt that syphilis should not be excluded on the strength of a negative Wassermann reaction but that antisyphilitic therapy should be administered early in all cases of so-called cryptogenic anemia when the anemia could not be accounted for by pregnancy or parasitic infestation.

TABLE 3.—*Change in Hemoglobin with Antisyphilitic Treatment*

		1st Observation		Treatment		2d Observation		Gain in
Patient	Sex	Date, 1928	Hemoglobin, per Cent	Arsphenamine Injections	Mercury Injections	Date, 1928	Hemoglobin, per Cent	Hemoglobin, per Cent
L. C.	♀	2/ 1	77	3	0	5/23	88	11
I. D.	♀	3/14	80	1	2	6/ 6	90	10
R. L. C.	♀	3/21	75	6	0	5/16	93	18
F. P.	♀	3/ 7	72	4	2	5/23	85	13
M. T.	♀	2/ 1	85	9	4	6/ 6	90	5
L. D.	♀	4/11	89	3	0	6/ 6	90	1
W. A.	♂	4/ 4	86	3	0	6/ 6	95	10
I. W.	♀	4/27	65	2	0	5/16	58	−7*

* Pregnant.

In evaluating any apparent improvement after the use of arsenicals, we must remember that the course of pernicious anemia is one notably characterized by remissions, and that arsenic is a drug which often influences the course of the disease favorably for a time regardless of the association of syphilis.

The assertion has been made that occasionally the blood of patients with pernicious anemia gives a positive result in the absence of syphilis (so-called false positive). Foucar and Stokes quote Sanford[23] to this effect. However, Cornell[24] performed Wassermann

11. Labbé, M., and Chaillons, M.: Bull. et mém. Soc. méd. d hôp. de Paris **23**: 852-857, 1906.
12. Bramwell, Byron: Brit. M. J. **1**: 1413-1417, 1912; **1**: 547, 1911.
13. Maynard, E. F.: Brit. M. J. **1**: 71, 1913.
14. Hobhouse, E.: Brit. M. J. **2**: 1659, 1912.
15. Friedlander, Alfred: Salvarsan in Pernicious Anemia, J. A. M. A. **58**: 406 (Feb. 10) 1912.
16. Leede, C.: München. med. Wchnschr. **58**: 1184, 1911.
17. Boggs, T. R.: Bull. Johns Hopkins Hosp. **24**: 322, 1913.
18. Foucar, H. O., and Stokes, J. H.: Am. J. M. Sc. **162**: 633-647 (Nov.) 1921.
19. Von Winterfeld, H. K.: Arch. f. Dermat. u. Syph. **143**: 298-313, 1923.
20. Levine, S. A., and Ladd, W. S.: Bull. Johns Hopkins Hosp. **32**: 254-266 (Aug.) 1921.
21. Walker, I. C., and Haller, D. A.: Routine Wassermann Examinations of Four Thousand Hospital Patients, J. A. M. A. **66**: 488 (Feb. 12) 1916.
22. Hoff, F.: Deutsches Arch. f. klin. Med. **144**: 297-305 (June) 1924.
23. Sanford, A. H.: New York State J. Med. **19**: 415-420, 1919.
24. Cornell, B. S.: Pernicious Anemia, Duke University Press, 1927.

tests on sixty-four consecutive patients suffering from pernicious anemia. The patients came from a rural district in Ontario where syphilis is uncommon. The results were consistently negative.

Hirschfeld [25] stated that in a few instances syphilis in the tertiary stage may present the symptom complex of pernicious anemia, that syphilis is more often an associate than a cause of pernicious anemia, and that the question of syphilitic etiology is determined only by the success of antisyphilitic therapy. If this is accepted as a reasonable standard, we do not find any cases that meet it.

ANEMIA OF SECONDARY TYPE IN LATE SYPHILIS

1. *Not Accompanied by Splenomegaly.*—Fournier states that it is possible for the blood changes to persist as the sole stigmas of latent infection and that they may reappear in the tertiary stage as récidives, in the same manner as all the manifestations.

A severe reduction in the hemoglobin may accompany the so-called syphilitic cachexia found in certain types of late syphilis. It may occur in the presence or absence of other obvious signs of the infection. As Fournier suggested, it is difficult to say whether syphilis is the cause of the modifications in the blood or whether they are the result of associated symptoms (febrile state, symptoms of dyspepsia, nervous troubles, superimposed infections or the influence of misguided therapy). The interference of visceral change with normal body function might be added to this.

In the twenty-five cases of severe anemia studied by them, Foucar and Stokes found one case associated with each of the following conditions: gastric syphilis, hepatitis and cutaneous tertiary syphilis, hereditary syphilis, aortitis, splenomegaly and enlarged liver, chronic arthritis and osteitis. I am reporting one instance of anemia associated with splenomegaly and enlarged liver (case 1), one with splenomegaly (case 2), one with atrophic arthritis (case 4), and two presenting no other signs of the infection (cases 3 and 5).

I have attempted to gain some conception of the frequency of anemia in some of these conditions by surveying the accessible studies of the late manifestations. For example, in sixty-three cases of tertiary syphilis of the liver in which blood counts were made, McCrae and Caven [26] found that the hemoglobin averaged 70 per cent and the red cells 4,300,000 per cubic millimeter, the red count falling below 3,000,000 in only four cases.

In syphilis of the stomach, Hartwell [27] says that it is generally conceded that anemia, cachexia and emaciation are less than with other conditions giving similar radiologic changes. Still, cases showing definite anemia are recorded by Oppenheimer, Crohn, Winterstein and Marcus.[28]

Scott [29] studied twenty-five cases of syphilitic aortic insufficiency and found that although pallor was the rule, in no instance was this due to anemia, as was shown by the red counts and hemoglobin determinations. Hatzieganu,[30] however, reports seven instances in women between the ages of 40 and 58 who suffered with grave anemia coexistent with syphilitic aortitis. He called this the aortitis-anemia syndrome and felt that its more frequent occurrence in women at the menopause might be due to disturbed internal secretion. Hoff's report of anemia of pernicious type associated with syphilitic aortic disease in five patients has been mentioned. Strümpell [31] also referred to the possibility of the occurrence of anemia in syphilitic aortitis.

2. *Associated with Splenomegaly.*—Minot [32] says that of the idiopathic anemic conditions, Banti's is the one that may be more closely simulated by syphilis than the others and that, in fact, syphilis may be the cause of entirely the same clinical and blood picture as Banti's disease, the only difference lying in the Wassermann reaction. Norris, Symmers and Shapiro [33] assert that Banti's disease is not an independent clinical or anatomic entity, that late syphilis may produce an identical clinical picture, and that the histologic changes in the spleen are the same as those described by Banti.

In 1908, Osler [34] directed attention to syphilis as a possible cause of splenic enlargement and to the association with it of anemia. Since then, single cases have been reported by a number of writers, including Lemaire,[35] Caussade and Levi-Franckel,[36] Anderson,[37] Hartwell, Timbal [38] and Eason. Osman [39] reports two cases and Giffin [40] three (one is evidently the same as Anderson's). In surveying this collected group, I find that in all the anemia was of the secondary type. The red cells were not greatly reduced in all instances, but the relative reduction in hemoglobin was marked. The leukocyte counts ranged from 1 to 9,000. The Wassermann reaction was positive whenever the test was performed. The duration of symptoms ranged from three months to twelve years. Enlargement of the liver was noted frequently. In some instances there was improvement in anemia and reduction in the size of the spleen with antisyphilitic therapy. In six of the cases, splenectomy was performed; in one as a primary measure, in the other five after merely slight or entirely unsatisfactory results from antisyphilitic therapy. There was one death following splenectomy; the other five patients who had been splenectomized showed apparent improvement.

Furno [41] states that in three of his patients antisyphilitic therapy was followed by a return to normal conditions. In one of his cases antisyphilitic treatment was followed eventually by death, as it was in case 1, observed by Dr. Richard Dexter and myself for seven years, while case 2 is an illustration of the response to ordinary antisyphilitic treatment.

What is the rôle of the spleen in the production of this anemia? The spleen is invaded early in constitutional syphilis. Wile and Elliott [42] found splenic enlargement in thirty-six of 100 cases of early syphilis, and Soukernik [43] found it in thirty-seven of his sixty-one cases, though Peiser [44] believes that a tumor of the spleen is a pathognomonic symptom of only secondary

25. Hirschfeld: Lehrbuch für Blutkrankheiten, Hirschwald, 1918, p. 106.
26. McCrae, T., and Caven, W. R.: Am. J. M. Sc. **172**: 781-796 (Dec.) 1926.
27. Hartwell, J. A.: Ann. Surg. **81**: 767-790 (April) 1925; M. Rec. **85**: 593, 1914.
28. Oppenheimer, S. S.: Crohn, B. B.; Winterstein, A., and Marcus, J. M.: New York State J. Med. **26**: 540 (June 15) 1926.
29. Scott, R. W.: Syphilitic Aortic Insufficiency, Arch. Int. Med. **34**: 645-657 (Nov.) 1924.
30. Hatzieganu, J.: Bull. et mém. Soc. méd. d. hôp. de Paris **48**: 1605 (Nov. 21) 1924.
31. Strümpell, A.: Lehrbuch der speziellen Pathologie und Therapie innerer Krankheiten, 1920, quoted by von Winterfeld (footnote 19).
32. Minot, G. R.: Syphilis, in Oxford Medicine **2**: 642.
33. Norris, C.; Symmers, D., and Shapiro, L.: Am. J. M. Sc. **156**: 893 (Dec.) 1917.
34. Osler, William: Brit. M. J. **2**: 1151-1158, 1908.
35. Lemaire, A.: Bull. Acad. roy. de méd. de Belg. **28**: 370,387, 1914.
36. Caussade, G., and Levi-Franckel, G.: Bull. et mém. Soc. méd. d. hôp. de Paris **37**: 1029-1047, 1914.
37. Anderson, H. B.: Canada Lancet **47**: 740-742, 1914.
38. Timbal, L.: Paris. méd. **12**: 274-276 (Sept. 23) 1922.
39. Osman, A. A.: Guy's Hosp. Rep. **71**: 19-49 (Jan.) 1922.
40. Giffin, H. Z.: Am. J. M. Sc. **152**: 5-16 (July) 1916.
41. Furno, A.: Policlinico (sez. med.) **29**: 123-143 (March 1) 1922; abstr. J. A. M. A. **78**: 1579 (May 20) 1922.
42. Wile, U. J., and Elliott, J. A.: Am. J. M. Sc. **150**: 512-518, 1915.
43. Soukernik, O.: De la splénomégalie pendant la période secondaire de la syphilis, Paris, 1895.
44. Peiser, B.: Med. Klin. **18**: 925-928 (July 16) 1922.

importance in secondary syphilis. It seems not unlikely that foci are laid down in the spleen during the early stage of constitutional invasion and that the spirochetes remain latent for years to take on activity later, a situation analogous to that found in cerebrospinal syphilis. That the spleen plays some part, direct or indirect, in the destruction of erythrocytes and so in the causation of anemia seems indisputable in the face of the clinical improvement that has followed its surgical removal. It is most significant that in some instances (Giffin and Osman) a negative Wassermann reaction followed splenectomy.

SPLENOMEGALIC ANEMIA IN CONGENITAL SYPHILIS

As Parkes Weber [45] states, undoubtedly syphilitic splenomegalies, especially those in children and young adults due to congenital syphilis, have been regarded as those of splenic anemia or Banti's disease. Indeed, he felt that moderate splenomegaly in children between the ages of 5 and 16 may be the only evidence of an inherited syphilitic taint.

This brings up the question of anemia and splenomegaly in inherited syphilis. Warthin [46] emphasized the possibility of congenital syphilis giving the picture of the so-called splenic anemia complex. Rieux,[47] after reviewing the literature of Banti's disease, concluded that hereditary syphilis plays an important part in its causation, but not exclusively. Péhu [48] states that during the second year of life anemia and nervous symptoms may appear. The anemia is persistent though not severe or marked by lymphocytosis. Associated with splenic enlargement, it may continue for several years. Frank [49] found that anemia occurred almost only in those congenitally syphilitic children who had visceral changes, and that antisyphilitic therapy influenced the anemia as little as it did the visceral symptoms. In some lethal cases there was a lymphocytosis up to 90 per cent with 30,000 leukocytes per cubic millimeter.

French and Turner [50] removed an enlarged spleen from an anemic, frail, congenitally syphilitic child aged 5 years. Prior antisyphilitic treatment had not resulted in any marked benefit. Two months after splenectomy, the boy was apparently normal. His sister, aged 7 months, also had anemia and an enlarged spleen.

In reference to splenic enlargement in infancy and early childhood, the frequency of causes other than syphilis must be remembered. Rickets, tuberculosis and malaria must be excluded before a diagnosis of syphilitic splenic anemia is tenable, but with equal emphasis it may be stated that the diagnosis of Banti's disease should not be made until syphilis has been excluded.

SYPHILITIC LEUKEMIA

The possibility of syphilitic leukemia is mentioned by Fournier. Osler and Churchman [51] state that in certain cases of syphilis with enlargement of the liver and the spleen the degree of leukocytosis is such that leukemia is suspected, and they cite such a case.

Warthin has reported three cases of congenital syphilis in which the blood picture was that of acute lymphatic leukemia, though the autopsy observations were typically those of congenital syphilis with characteristic changes in the liver, spleen and lungs, and the presence of spirochetes without any lesions typical of leukemia of the known types. In one case, the blood showed 2,000,000 erythrocytes, 30 per cent hemoglobin, and from 40,000 to 60,000 leukocytes, largely mononuclears of the large lymphocyte type. All the lymph nodes were enlarged. The bone marrow and lymph nodes were nonleukemic in character. Warthin felt that the blood state was histogenous in origin rather than myelogenous because of the atypical character of the cells in the blood and their identity with the cells in innumerable foci found in all the organs, particularly the liver, heart, lungs and spleen.

Elkin and Bowcock [52] reported the case of an adult who showed enlargement of the spleen and high lymphocyte count, suggesting an atypical leukemia. The Wassermann reaction was positive. Although there was initial improvement with x-ray therapy, splenomegaly reappeared with secondary anemia, leukopenia, enlarged liver and jaundice. The administration of neoarsphenamine resulted in great improvement.

Though syphilis may produce the blood changes of leukemia, the picture is a simulated one, as shown by Warthin's necropsy observations.

PAROXYSMAL HEMOGLOBINURIA

The anemia produced by paroxysmal hemoglobinuria is similar to that found in other blood losses, being of the secondary type. Its gravity depends on the number and severity of the paroxysms. In attacks, the red cells may fall from 500,000 to 700,000 per cubic millimeter, the loss rarely exceeding 1,000,000.

Chvostek suggested syphilis as a cause for paroxysmal hemoglobinuria in 1894. Monod mentioned the possibility in 1900, as did Donath and Landsteiner [53] in 1905. Eason independently came to similar conclusions, while Macalister [54] felt that syphilis was the cause in the majority of instances though not in all.

The occurrence of a high percentage of positive Wassermann reactions has been noted by numerous observers. Relief from attacks following antisyphilitic treatment has been reported by B. B. and C. M. Jones,[55] Traub,[56] and Kumagai and Namba.[57] The latter treated fourteen patients intermittently for a long time with antisyphilitic drugs, arsphenamine, mercury inunctions and potassium iodide, bringing about a clinical cure in ten cases.

It may be conservatively concluded that syphilis is responsible for many instances of paroxysmal hemoglobinuria and that in all cases antisyphilitic treatment should be tried.

THE TREATMENT OF THE SYPHILITIC ANEMIAS

The anemia occurring in early constitutional syphilis usually responds well to treatment. The prognosis in cases in which anemia occurs in late syphilis depends on the associated organic disease. There are certain therapeutic limitations that are worth consideration.

That mercury must be used cautiously was recognized by Keyes,[58] in 1876, who found that it decreased the number of red cells when given in excess. Similar results were obtained by Stoukovenkoff, Jellenew, Kon-

45. Weber, F. P.: Brit. J. Child. Dis. **20**: 78-83 (April-June) 1923.
46. Warthin, A. S.: Internat. Clin. **4**: 60-64, 1910.
47. Rieux, J.: Médecine **4**: 458-462 (March) 1923.
48. Péhu, M.: Médecine **4**: 853-858 (Aug.) 1923; Ann. d. mal. vén. **22**: 1-19 (Jan.) 1917.
49. Frank, M.: Monatschr. f. Kinderh. **31**: 470-474 (Dec.-Jan.) 1926.
50. French, H., and Turner, P.: Proc. Roy. Soc. Med. **7**: Clin. Sec. 77, 1913-1914.
51. Osler, William; and Churchman, J. W., in Osler's Modern Medicine, ed. 1, **3**: 478, 1907.
52. Elkin, Arch; and Bowcock, H. M.: A Case of Marked Splenomegaly and Lymphocytosis Associated with Syphilis, J. A. M. A. **85**: 1135-1136 (Oct. 10) 1925.
53. Donath, J., and Landsteiner, K.: Centralbl. f. Bakteriol. **45**: 205, 1907-1908.
54. Macalister, G. H. K.: Quart. J. Med. **2**: 368-395, 1908-1909.
55. Jones, B. B., and Jones, C. M., in Nelson's Loose Leaf Living Medicine **4**: 173.
56. Traub, H.: Am. J. Syph. **9**: 717-722 (Oct.) 1925.
57. Kumagai, T., and Namba, M.: Deutsches Arch. f. klin. Med. **156**: 257-271, 1927.
58. Keyes, E. L.: Tr. Internat. M. Cong., 1876, pp. 726-740.

ried [59] and Monod. Foucar and Stokes found a reduction in hemoglobin and red cells following mercurial inunctions in four of nine patients whose blood picture resembled pernicious anemia. It is obvious that though Fournier may have regarded mercury as the "iron of syphilitic anemia," it must be employed carefully in severe cases.

Grassi's work pointed to the potency of iodides in increasing the erythrocyte count in early syphilis, and Keyes stated that "potassium iodide is tonic and increases the number of red blood cells in all stages of syphilis."

That arsphenamine must be given cautiously when anemia is present is the feeling of practically all observers. The possible hemolytic action may be detrimental when the blood is impoverished. The result of arsphenamine is well illustrated in the report of case 4.

Darier and Cottentot,[60] in 1911, observed a reduction in red blood cells a few hours after the intravenous injection of arsphenamine. Sicard and Bloch [61] found an increase when counts were made from thirty-six to forty-eight hours after the injection. MacKee [62] found that an initial drop occurred with systemic reaction only when stale water was used. Undoubtedly, there is little effect on the red cells in the great majority of persons, but occasional untoward results are seen.

Foucar and Stokes emphasize the importance of taking all precautions to prevent reactions, for accidents which might be only disagreeable in otherwise healthy subjects may assume dangerous proportions in those whose condition is already grave. They found in six patients a drop in hemoglobin of from 10 to 20 per cent and a decrease of about 500,000 erythrocytes during arsphenamine therapy. They reviewed the literature and concluded that in general it appeared that there is a transient destruction of red cells followed by a rise whose degree and permanence vary in different opinions.

When the liver is involved with splenomegalic anemia, McCrae and Caven's conclusion that arsenical preparations are absolutely contraindicated in the great majority of cases of syphilis of the liver is important.

Arsphenamine treatment may produce an aplastic condition of the bone marrow. The clinical picture is one of variable anemia, a marked decrease in the leukocytes, especially those of the granulocytic series, with bleeding from the gums or mucous membranes. Earlier reports were by Gorke,[63] Labbé and Langlois,[64] Moore and Foley,[65] Moore and Keidel,[66] and Anwyl-Davies. Dodd and Wilkinson [67] recently collected reports of twenty-four cases, of which fourteen terminated fatally. The similarity to the effect of benzene was commented on. The need for caution in the use of so powerful an agent is obvious, particularly when the number of erythrocytes is near the margin of safety.

The desirability of increasing the number of erythrocytes by transfusions before starting any specific therapy in cases of marked blood impoverishment is obvious, especially in view of the possible ill effect of treatment.

A review of the cases with splenic enlargement showed that a number gave prompt and satisfactory response to systemic antisyphilitic treatment, but that others did not, and that many of the latter class were benefited by splenectomy.

The usefulness of iron as an adjuvant is generally recognized.

SUMMARY

Other causes must be excluded before making a diagnosis of syphilitic anemia. Syphilis may be merely associated with the anemia and may not be its actual cause.

Anemia may appear at any stage of the disease. It may appear early in the stage of constitutional invasion but is not a constant feature. It is more frequent in women than in men, and is usually mild and of secondary type.

There is no final proof that syphilis may produce an anemia of pernicious type.

In the later stages of syphilis, anemia may accompany visceral changes, such as aortitis, gastric syphilis and hepatic syphilis, and it may be a feature of syphilitic cachexia.

The anemia of late syphilis may be accompanied by splenomegaly. The clinical picture bears a close resemblance to Banti's disease.

The clinical picture of leukemia has been simulated by syphilis.

Paroxysmal hemoglobinuria has been attributed to syphilis. A large proportion of cases show a positive Wassermann reaction, and the literature gives many instances of clinical cure or improvement after antisyphilitic treatment.

In general, the consensus is that both mercury and arsenic must be used with caution in the treatment of anemia in syphilis, for a reduction in hemoglobin and number of red cells may result. The recent literature offers little regarding the influence of the iodides. Transfusions have a place in bringing the blood to a point at which antisyphilitic medication may be employed safely. Splenectomy has proved beneficial in splenomegalic anemia after failure of specific therapy.

REPORT OF CASES

CASE 1.—*Severe anemia in late syphilis of secondary type. Enlargement of liver and spleen. No permanent improvement with antisyphilitic treatment. Death. Observed six years.*

M. S., a woman, married, aged 53, was admitted to the service of Dr. Richard Dexter at St. Alexis Hospital, Cleveland, Dec. 16, 1920, complaining of "heart trouble and dropsy." Palpitation and shortness of breath on exertion and at times severe epistaxis were present. About eight years before she had begun to have nausea, vomiting and dizziness. The family history was not significant. There was no history of venereal infection. She had four living children and had had four miscarriages.

Physical examination showed pallor; enlargement of the heart; a systolic murmur over the apex and a diastolic murmur over the aortic area; a marked enlargement of the liver and spleen, with the edges smooth, and marked edema of both legs and feet.

Blood examination, December 21, showed: red blood cells, 2,396,000; hemoglobin, 27 per cent; color index, 0.56; white blood cells, 2,800; large mononuclears, 7.2 per cent; transitionals, 0.8 per cent; polymorphonuclear neutrophils, 76.4 per cent, and polymorphonuclear eosinophils, 1.2 per cent. The Wassermann reaction was ++. The urine contained an occasional trace of albumin but was otherwise normal. No free hydrochloric acid was found in the contents of the stomach; there was a total acidity of 25; the lactic acid was negative.

X-ray examinations showed that the gastro-intestinal system (including barium meal and enema) was essentially normal.

59. Konried: Tr. Internat. dermat. Cong., 1892, pp. 714-723, quoted by Zeisler (footnote 8).
60. Darier and Cottentot: Bull. et mém. Soc. méd. d. hôp. de Paris **31**: 415-426, 1911.
61. Sicard, J. A., and Bloch, M.: Compt. rend. Soc. de biol. **69**: 625, 1910.
62. MacKee, G. M.: J. Cutan. Dis. **30**: 199-206, 1912.
63. Gorke, Hans: München. med. Wchnschr. **67**: 1226-1227, 1920.
64. Labbé, M., and Langlois, S.: Bull. et mém. Soc. méd. d. hôp. de Paris **43**: 229 (March 7) 1919.
65. Moore, J. E., and Foley, F. E. B.: Serious Reactions from the Salvarsan and Diarsenol Brands of Arsphenamin, Arch. Dermat. & Syph. **1**: 25 (Jan.) 1920.
66. Moore, J. E. and Keidel, Albert: Stomatitis and Aplastic Anemia Due to Neo-Arsphenamin, Arch. Dermat. & Syph. **4**: 169 (Aug.) 1921.
67. Dodd, Katherine; and Wilkinson, S. J.: Severe Granulocytic Aplasia of the Bone Marrow, J. A. M. A. **90**: 663-665 (March 3) 1928.

The heart was enlarged to the right and the left. The aorta was somewhat elongated but was not dilated. There was no aneurysm.

Mercury injections given in January and February, 1922, did not change the blood picture. Neoarsphenamine was given in 1921 with no improvement. Transfusions resulted in temporary increase in the red count and the hemoglobin content in March, 1922. The patient was readmitted in January, 1923. The blood examination showed: red blood cells, 2,260,000; hemoglobin, 28 per cent; color index, 0.62, and white blood cells, 4,350; Jan. 3, 1927, red blood cells, 2,020,000; hemoglobin, 35 per cent, and color index, 1.1. The course was steadily down hill. Death occurred, January 26. The autopsy was limited to the abdomen, and showed a spleen weighing 470 Gm., ascites, fibrosis of the Glisson capsules, and numerous depressed scars over the liver.

Case 2.—*Anemia of secondary type accompanied by splenomegaly. Latent syphilis. Apparent recovery with antisyphilitic therapy. Observed six months.*

J. A., a woman (seen with Dr. W. J. W. Woolgar), married, aged 50, first seen, Sept. 12, 1921, gave no history of syphilis. She had three adult daughters in good health, and had had a number of miscarriages, some induced. Her general health had been unusually good prior to this illness.

Physical examination revealed pronounced pallor but no icterus of the skin or mucous membranes; a moderate enlargement of the heart to the left, and a systolic murmur best heard over the base. The lower border of the spleen was felt as a firm edge about 4 fingerbreadths below the costal border. The liver was not enlarged. There was a slight edema of the ankles. The blood examination, September, 1921, showed: red blood cells, 5,146,000; hemoglobin, 50 per cent (Sahli); color index, 0.5; white blood cells, 3,100; differential count: polymorphonuclear neutrophils, 51.1 per cent; small mononuclears, 32.9 per cent; large mononuclears, 11.8 per cent; polymorphonuclear eosinophils, 0; transitionals, 3.8 per cent; Türck cells, 0.4 per cent, and mast cells, 0.

A stained film showed a moderate grade of anisocytosis, slight polychromatophilia, marked poikilocytosis, the usual proportion of platelets, no nucleated red blood cells and no myelocytes. The central pale area of the red blood cells was varied, but was greatly increased in the majority of cells. There were numerous Cabot's ring-bodies. The reticulated cells were less than 1 per cent. The fragility of the red blood cells was greatly increased. The Wassermann reaction was strongly positive.

Intramuscular injections of red mercuric iodide were given immediately and pills of ferrous carbonate interruptedly. Improvement was prompt and rapid, both as to anemia and as to splenic enlargement. Blood examination, November 29, showed: red blood cells, 6,696,000; hemoglobin, 110 per cent (Sahli); color index, 0.82, and white blood cells, 6,000. The Wassermann reaction was only 2+.

A third examination, March 7, 1922, showed that red blood cells were still above normal, as was the hemoglobin percentage. Recent inquiry shows that the patient is still living.

Case 3.—*Anemia of secondary type. Latent syphilis. No splenomegaly. Initial improvement in anemia with antisyphilitic therapy but later relapse. Observed seven and one-half years.*

A woman (seen with Dr. Richard Dexter), married, aged 46, seen in December, 1920, complained of paleness and attacks of dull pain in the region of the right scapula, accompanied by numbness and tingling in the upper arms and a feeling of depression in the upper chest. During these attacks she belched gas, and after the attack the flesh in the upper arms felt sore. These attacks had occurred for five months. The history did not reveal anything of importance. There was no history of syphilis. There had been no miscarriages.

Physical examination showed marked pallor; the heart enlarged to the left; a systolic murmur at the base of the heart, and the aortic second sound accentuated. There was a loud venous hum over the vessels of the neck. The area of aortic dulness was enlarged to the left and right. The other arteries did not show thickening. The blood pressure was 115 systolic and 70 diastolic. The liver and spleen were not enlarged. The right pupil was larger than the left; both reacted normally to light and in accommodation. The knee and ankle jerks were exaggerated.

The Wassermann reaction was strongly positive. Blood examination showed: red blood cells, 4,140,000; hemoglobin, 50 per cent; color index, 0.6, and white blood cells, 11,200. A stained film did not show abnormalities except an increased central pale area in the red blood cells.

After eight intramuscular injections of mercuric salicylate, blood examination, March 3, 1921, showed: red blood cells, 4,876,000; hemoglobin, 64 per cent; color index, 0.67, and white blood cells, 8,960. After twenty-two more injections of mercuric salicylate, blood examination, March 28, 1922, showed: red blood cells, 4,252,000; hemoglobin, 84 per cent; color index, 0.8, and white blood cells, 9,100.

No further treatment was given. May 9, 1928, the patient stated that she felt well. Fluoroscopic examination did not show any abnormality of the aorta. The Wassermann reaction was negative. Blood examination showed: red blood cells, 4,224,000; hemoglobin, 55 per cent; color index, 0.62; white blood cells, 6,000; differential count: polymorphonuclear neutrophils, 57 per cent; small mononuclears, 34 per cent; large mononuclears, 2 per cent; polymorphonuclear eosinophils, 5 per cent, and transitionals, 2 per cent.

Case 4.—*Anemia of secondary type. Latent syphilis. Also atrophic arthritis. No improvement with antisyphilitic therapy. Death from intercurrent infection (pneumonia). Observed four and one-half years.*

Mrs. M. H., a widow, aged 52, seen, Dec. 15, 1918, complained of "rheumatism." The family and personal history were not significant. There was no history of syphilis. Stiffness of the joints had begun about three and one-half years before, the ankles and knees being affected first.

The skin and mucous membranes showed marked pallor. All the teeth had been extracted. The tonsils were extremely small. The heart was normal except for a slight accentuation of the aortic second sound. The lungs were clear. There was no enlargement of spleen or liver. The pupils were normal. The knee and ankle jerks were sluggish. There was a marked deforming arthritis of the hands, elbows, shoulders, knees and hips. X-ray examination showed an atrophic arthritis.

Blood examination showed: red blood cells, 3,596,000; hemoglobin, 79 per cent; color index, 1.09, and white blood cells, 8,660. The Wassermann reaction was strongly positive.

Eight injections of neoarsphenamine were given. There seemed to be an improvement in the mobility of the hands and elbows. Aug. 25, 1919, blood examination showed: red blood cells, 4,100,000; hemoglobin, 85 per cent; color index, 0.96; white blood cells, 10,200; differential: polymorphonuclear neutrophils, 74 per cent; small mononuclears, 10.6 per cent; large mononuclears, 5 per cent; polymorphonuclear eosinophils, 7.3 per cent; mast cells, 0.4 per cent; transitionals, 1.6 per cent, and Türck, 0.4 per cent. Another examination in September gave practically the same results as the first examination a year before.

In February, 1922, intravenous injections of arsenic and iron were given for four weeks without appreciable change in the blood picture.

The blood count, March 27, showed: red blood cells, 4,000,000; hemoglobin, 87 per cent; color index, 1.08; white blood cells, 6,500; differential: polymorphonuclear neutrophils, 76 per cent; small mononuclears, 12.4 per cent; large mononuclears, 3.2 per cent; polymorphonuclear eosinophils, 7 per cent, and transitionals, 1.4 per cent. The patient contracted lobar pneumonia and died, April 9, 1923. A necropsy was not performed.

Case 5.—*Anemia of secondary type. Unfavorable immediate effect on erythrocytes and hemoglobin of arsphenamine. Eventual recovery. Observed ten years.*

L. L., a woman, married, aged 52, seen, May 20, 1918, was referred by Dr. John MacLachlan, who had made the diagnosis of syphilitic anemia. The patient was extremely pale and complained of weakness. The blood count done before starting treatment showed: red blood cells, 2,000,000; hemoglobin, 37 per cent, and color index, 0.9. The Wassermann reaction was strongly positive. May 20, 1918, arsphenamine (0.3 Gm.) was given intravenously. The temperature rose to 101 F. after the

injection; there was nausea and vomiting, but the reaction did not last long. Three months later, the patient was stronger and had a better appetite.

Aug. 21, 1919, the blood examination showed: red blood cells, 3,276,000; hemoglobin, 67 per cent; color index, 1.06; white blood cells, 9,900. The fragility of the erythrocytes was normal; differential: polymorphonuclear neutrophils, 76.6 per cent; small mononuclears, 18 per cent; large mononuclears, 3.0 per cent; polymorphonuclear eosinophils, 0.3 per cent; mast cells, 0.4 per cent, and transitionals, 1.3 per cent.

September 4, the patient was given neoarsphenamine (0.6 Gm.) intravenously. Again there was a severe reaction. September 20, the blood examination showed a distinct drop in erythrocytes and hemoglobin content. The results were: red blood cells, 2,740,000; hemoglobin, 43 per cent; color index, 0.78, and white blood cells, 7,660.

She improved rapidly, however. October 13, the count showed: red blood cells, 3,660,000; hemoglobin, 45 per cent; color index, 0.59, and white blood cells, 11,300. November 11, the red count had reached 4,440,000 and the hemoglobin was 80 per cent. No further treatment was given. March 13, 1928, the patient was in excellent health. The Wassermann reaction was negative; blood count, red cells, 4,976,000; hemoglobin, 95 per cent; color index, 0.95; white blood cells, 10,600.

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ABSTRACT OF DISCUSSION

DR. RAPHAEL ISAACS, Ann Arbor, Mich.: Dr. Cummer's paper brings out the point that there is no specific morphologic picture in syphilis. We cannot look at a blood slide or make a blood count and diagnose syphilis, but if we find the morphologic picture in the blood slide changed very much we may expect that some complication is setting in. If we find anemia, we may suspect that an aplastic anemia is developing, or if we find an eosinophilia, we may expect that a skin eruption is developing. In the treatment of neurosyphilis with malaria, the blood count will tell when the anemia is getting so severe that we must stop the treatment. We have studied about seventy-five patients with pernicious anemia and about 4 per cent of these have had a positive Wassermann reaction. It has been possible to cure these patients of their anemia by feeding them liver or liver extract, without any antisyphilitic treatment. In connection with any disease in which the Wassermann test is positive, we cannot say that syphilis is the cause of that disease unless we can show that the individual would not have developed the disease if he had not had syphilis, and when syphilis is associated with any disease it is rather uncertain to say that the syphilis is a causative factor. With anemia in syphilis, as well as in any condition, one must bear in mind the enormous variation in normal persons. When we consider that a normal person during the course of a day may have the blood count change one million or more, and the hemoglobin change 15 per cent or more, we should be rather cautious in judging anemia or the effects of treatment in relation to anemia.

DR. CLYDE L. CUMMER, Cleveland: In regard to treatment, it has been found that mercury cannot always be pushed in these cases. It sometimes aggravates the anemia; and the same is true of arsphenamine. There is a possibility of arsphenamine producing an aplastic anemia. In many cases it has been found that transfusion is advisable before further treatment is attempted. Dr. Isaacs made an important point about eliminating all other factors before diagnosing syphilitic anemia. The mere presence of a positive Wassermann reaction in a patient suffering from anemia does not establish syphilis as a cause of this anemia. In late syphilis the one form which stands out as a definite syndrome is splenic anemia.

Displacement of Heart in Tuberculosis.—Probably no objective sign in advanced pulmonary tuberculosis has such prognostic value as the location of the heart-beat. When the heart has been translated far to the left or to the right of the sternum it is evidence that effective compensation is balancing the loss of tissue and checking toxemia from the more diseased lung, and if the contralateral organ be self-sustaining the prognosis may be highly favorable.—Sewall: *Am. Rev. Tuberc.*, August, 1928.

FRACTURES IN INDUSTRY*

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The presentation of the facts and statistics here given does not in any way attempt to change the technic of treating fractures. The success or failure to accomplish a good functional result in the treatment of fractures depends entirely on the individual's knowledge of the anatomy and mechanics of the part involved. The technic used by the operator is usually one modified by himself, but has as its fundamentals the physics of levers and the mechanics of joints. The primary intention, of course, is to return the broken part to its normal state, and in the wage earner in the shortest possible time. There are many factors which enter into the treatment of a fracture in industry:

1. Length of disability.
2. Financial loss to the employee.
3. Financial and production loss to the employer.
4. Sacrifices of the employee's family.
5. Mental reaction and cooperation of the individual.
6. Cooperation of the employer.
7. End-results and disabilities.
8. Future financial impediment.

1. The length of disability depends on the nature of the fracture, the proper care of the injury, the nature of the individual's work and his insurance coverage.

2. Financial loss to the employee in many cases works such a hardship on the dependents, especially if the injured has several dependents and is without insurance coverage and must rely entirely on compensation, that he is forced to seek light work at the earliest possible moment.

3. Financial loss to the employer in many cases is also great. It necessitates putting a man in his place and, if none is available, one must be taught the operation. If the individual is a pivot man in a pool or on a conveyor or machine it may necessitate shutting down the machine, thereby causing financial loss to several other men in the pool who are on piece work. The medical expense is also a loss to the employer.

4. The average wage earner does not fortify himself financially against accidents by means of insurance, or the number of dependents may be out of proportion to the insurance coverage.

5. Mental happiness and stability are in many cases affected by a fracture, not necessarily because of the fracture itself but because of the inactivity, financial setback and family friction due to the enforced idleness.

6. The most important factor in fracture work is, of course, the end-results. This depends on the nature of the fracture, whether simple or compound, whether in long or in short bones, whether in joints, synchrondrosis or in flat bones. In fractures in which there is nothing exceptional contributing to the contrary, good results should be obtained.

End-results may vary from 0 to 100 per cent efficient, and this may be influenced by the skill and efficiency of the physician, the type of fracture and the health of the patient. The following diseases and factors certainly must be considered as affecting all fractures: nephritis, diabetes, syphilis, tuberculosis, blood-borne infections, deficiency diseases, malignancy, age, and such focal infections as the teeth, tonsils, intestinal and the accessory sinuses.

* Read before the Section on Orthopedic Surgery at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 15, 1928.

Such end-results as delayed union, nonunion, pseudarthrosis, fibrous union, secondary fracture, curving of adjacent bone structures, osteitis, osteomyelitis and ostearthritis may be prevented by the early use of x-rays and the laboratory and by obtaining a complete chemical and physical examination. A single abscessed tooth should not be overlooked; likewise the tonsils, which may contain pus. A history of rickets or of hemophilia should be sought for and considered in the treatment.

Experience with several thousand fractures over a period of twelve years has demonstrated that all available clinical and physical facts should be obtained. In this connection the statistics in the accompanying tables are presented.

TABLE 1.—*Types of Fractures, Showing Time Lost*

		Number	Days Lost	Averge per Case, Days	
Skull		11	215 (8 died)	19.5	
Mandible		5	132 (1 died)	26.4	
Nasal		9	100	11.3	
Malar		4	52	13	
Zygoma		3	33	11	
Ribs		90	1,516	14.9	
		1 multiple fracture of chest and arms; died 3 hours			
		1 fracture of 5 ribs, mandible and seventh dorsal vertebra; died			
Vertebrae		7	581 (2 died)	83	
Pelvis		..	...	....	
Coccyx		4	287 (1 died)	71.6	
Pubes		1	259	259	
Pubes and ischium		1	173	173	
Ilium		1	105	105	
Clavicle	Right	7	288	41.1	
	Left	8	294	36.7	38.9
Scapula	Right	3	177	59.0	
	Left	3	135	45.0	52
Humerus	Right	7	524	74.8	
	Left	14	1,315	93.9	84.5
Radius	Right	41	1,823	44.5	
	Left	48	1,832	38.2	41.3
Ulna	Right	17	1,139	61.0	
	Left	19	1,620	85.2	73.1
Colles'	Right	6	284	47.3	
	Left	6	207	34.5	40.9
Radius and ulna	Right	16	1,508	94.2	
	Left	18	1,472	81.7	87.9
Radius, ulna, humerus		1	93	93.0	
Multiple fracture of right arm		1	140 (died)	140.0	
Femur	Right	8	1,916	239.5	
	Left	5	883	176.6	208.1
Tibia	Right	10	717	71.7	
	Left	9	810	90.0	80.8
Fibula	Right	17	762	44.8	
	Left	4	267	66.7	55.7
Tibia and fibula	Right	12	1,602	133.5	
	Left	3	311	103.6	118.5
Malleoli	Exterior	2	74	37.0	
	Interior	3	169	56.3	46.6
Os calcis	Right	6	1,027	171.1	
	Left	3	197	65.6	118.2
Pott's	Right	5	266	63.2	
	Left	6	458	76.3	64.7
Pott's and multiple tibia left, comp. and infected		1	1,000	1,000.0	
Patella		11	995	90.4	
Tarsals		27	987	32.8	
Metacarpals		126	4,110	32.6	
Metatarsals		221	7,307	33.0+	
Carpals		33	895	27.1	
Phalanges of feet	1. 593				
	2. 204				
	3. 128				
		925	21,228	22.9	
Phalanges of hand	1. 691				
	2. 196				
	3. 158				
		1,045	28,129	27.7	
Total of all fractures with time lost		2,826	90,115	Av. 31.88	
From 1922 to 1928, 100 patients with fractures were hospitalized for 1,809 days, averaging 18.1 days					
Chip fractures and fissured fractures in which no time was lost		428	..	....	
Total		3,254	...	Av. 27.3	
Average Cost per Day	Company	1. $1.088			
		2. Plus compensation at maximum rate of $18.75 per week after the first week			
	Individual, $6.00				
	While in hospital, $1.86 and compensation				

From table 2 is presented a report of fractures made to the Industrial Commission of Ohio in 1926 for the whole state of Ohio.

In our industrial organization, all injured persons report to the hospital or dispensary, where a complete history of the accident is obtained and any other data that may have some relation to the case. An examination is made, roentgenograms are taken, and the type of fracture is determined, all of which determines the mode of treatment as to whether this is an ambulatory or bed patient, or whether it is an operative or nonoperative case. Since 1922, there have been 100 bed cases averaging 18.9 days in the hospital. Since 1916, we have had 428 cases in which no time was lost on account of minute fractures.

All fractures are corrected by manual manipulation or by surgical reduction, and the bones are held in place by traction apparatus, casts or bone grafts. Rarely do we introduce any foreign or metallic substance into a fracture except when it is necessary to wire a fractured mandible or put a nail in an olecranon process or a trochanter. Autogenous bone grafts have given much more satisfaction than any foreign metallic appliances. All chip fractures of digits are treated by applying aluminum finger protectors, and the patient is returned to some kind of work if possible. An effort is made to find suitable work for patients with ambulatory fractures.

FINANCIAL CONSIDERATIONS

Financial considerations may be divided into two main factors: (1) the employee and (2) the employer.

1. *The Employee.*—Practically all the fractures in our series have been in men who are paid by the hour or by piece work and their average earnings amount to about $36 a week. A large majority are married and have families of from one to six dependents. The earnings mentioned are relied on to supply the family with the necessities and the luxuries of life, and in most cases this income is taxed to the limit and often over the limit. The compensation rates in Ohio are two thirds of a man's wages up to a maximum of $18.75 a week, starting after the first week of disability. If this is the only income a man with a family has, his financial condition immediately becomes serious, his family is in need, his obligations cannot be met, and he faces bankruptcy and discouragement. In most large industrial concerns there is some form of disability insurance which pays weekly benefits and whose premium is very small. These benefits on the average amount to about $12 a week, so that with state compensation amounting to $18 a week and a weekly insurance benefit of $12, most employees and their families can be taken care of for the average length of a fracture disability. There are also those who have the income mentioned plus the income from two or three private insurance companies, and this income often exceeds their earnings by many dollars. In some cases in which there is a compound fracture with an infection and the period of disability is long, the limited time benefit insurance ceases and the individual is dependent entirely on state compensation; but these cases are not many. Fractures are corrected as soon after injury as possible, thus reducing time for exudation and swelling and promoting an earlier reparative process, and the patient returns to work sooner.

The end-results of our fracture experience is reflected in the average time lost for the total number of fractures as 27.3 days.

The largest percentage of temporary disability in earning capacity, in my experience, was 42.5, except in fatal cases of skull fracture. Traumatic amputations of fingers or toes have not caused a high percentage of disability, because variation of jobs and instruction for new jobs have maintained the earning capacity.

Fractures of the radius and ulna and the tibia and fibula have lowered the earning capacity for longer periods than any other fractures, and the period for doing light work has been longer.

The actual cost to the injured employee is based on the average time lost and the average earnings, which vary with the different fractures; but this average daily loss in our organization is $6.

2. *Employer.*—The actual loss to the employer is the cost of taking care of the fracture plus compensation, which amounts to $20.97 a week when the patient is not hospitalized. Patients who are hospitalized must have their sustenance added to this, which amounts to a total of $31.78 a week. If patients are sent to a privately owned hospital the cost is much higher, for the minimum ward rate of $3.50 a day must be paid at once, and the laboratory and materials fee, the services of a physician, and compensation to the man must also be paid.

TABLE 2.—*Fractures Reported to Industrial Commission*

	Number of Fractures	Days Lost
Femur (neck)	32	63,641
Femur (shaft)	102	82,280
Patella	67	3,908
Tibia	322	18,898
Fibula	359	31,282
Tibia and fibula	341	90,232
Metatarsals	907	45,631
Foot	372	41,596
Both feet	10	6,602

(This classification includes all bones of the feet except the metatarsals and phalanges. There is no separate classification for fractures of the os calcis.)

	Number of Fractures	Days Lost
Clavicle	164	6,487
Humerus (neck)	21	13,146
Humerus (shaft)	200	41,512
Radius	890	52,896
Ulna	201	7,874
Radius and ulna	279	20,972

In a large industry employing from 16,000 to 18,000 employees, and maintaining their own hospital and medical staff, the daily rate for hospital cases is reduced in this particular instance to $4.54 after the first week, including nursing, medical services and compensation. Without compensation it is $1.86 a day in the hospital. The average of all cases, both hospitalized and ambulatory, in which time is lost, costs the organization an average of $1.08 a day, not including compensation, which varies up to a maximum of $18.75 a week ($2.68 a day). This gives an average figure of $3.77 a day inclusive of compensation for all fractures, or an average of $102.81 for the complete cost of the average fracture.

Exclusive of the maximum rate of compensation, the average cost of fractures with time lost is $29.70. This is made possible by the large number of visits to the hospital, which statistics show in the last four years has been 281,863.5 a year. This includes all cases from headaches to traumatic deaths.

The total expenditure of the hospital, including personnel, is $89,402. This gives the cost per treatment of every individual reporting to the hospital as 31.7 cents, no matter whether it is dispensing a headache tablet, reducing a fracture, or amputating a leg. It is very difficult to determine the actual costs down to the minute figures. The foregoing figures are averages and are arrived at by taking the total operating expenses of our hospital and computing the rate on the number of cases treated. Our experience has shown that, in fractures that have taken longer than the average, the delay is caused by some other factor, such as:

1. Syphilis. One should not depend on a negative blood Wassermann reaction; a spinal puncture should be made.
2. Tuberculosis.
3. Infectious arthritis, especially in the small bones of the hands and the feet.
4. Hypertrophic arthritis coexisting with fracture.
5. Rickets existing previously.
6. Anemias with a low blood calcium.
7. Glandular diseases involving the thyroid and calcium equilibrium.
8. Diabetes, especially if any traumatic amputations must be done.
9. Acidosis.
10. A rare number of unaccountable and nonexplainable nonunions, which often result in bone grafting with 100 per cent results.

CONCLUSION

1. The financial cost for simple uncomplicated fractures on the average can be fairly well predicted.
2. The percentage of disability can be lowered to a great extent by the technical skill and proper supervision of the operator.
3. The physical condition of the patient in many cases prolongs the fracture period and increases the cost of certain types of fractures to himself and to his employer.

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ABSTRACT OF DISCUSSION

DR. A. E. WILCOX, Minneapolis: I was somewhat surprised to hear the short duration of disability given by Dr. Davis. The tendency in industry today, however, is to shorten periods of disability, and even to go so far as to hold the lost time accidents to a minimum. It is all right to make efforts to hold down disability, but I believe that it is a dangerous proposition to have only that thought in mind when treating industrial accidents, for when the thought of getting their men back to work is uppermost in the minds of enthusiastic foremen, I am of the opinion that occasionally harm is done to the injured workman. This effort to hold down lost time accidents is the result of, or at least is influenced by, environment. In one case a man may return to work earlier than is wise for fear of losing his position. Another man may return for financial reasons; a third may be urged by an overenthusiastic claim adjuster of an insurance company. In our didactic teaching of the treatment of injured tissues, particularly bones, we harp on the value of rest to bring about a cure as well as fixation. In Dr. Davis' statistics, the number of hospital days in cases of fractured vertebrae were very low, averaging, I believe, about eighty-three days; yet on this same program today we have heard several papers emphasizing the importance of periods of from five to six months' rest to obtain successful results in the treatment of fractures of the vertebrae. However, one of the most important points in Dr. Davis' paper was the cooperative spirit of the employer, the employee and the medical department. Confidence of the injured man in the medical adviser shortens disability. Also confidence of the employer in the surgeon in charge helps to obtain better results by giving the surgeon a free hand in the treatment of his cases. Before the compensation act was passed in several states the average injured employee was rebellious. He was more interested in what damages he could recover than he was in the functional result of his injury.

This attitude has been somewhat modified by the compensation act. An injured man coming under the compensation act and receiving only $16 or $18 a week during the period of disability is more anxious to get back on the job, particularly if he has dependents, than the man who, in addition to his compensation, possesses private insurance and has no dependents. Private patients, as a rule, who have interesting responsibilities have shorter convalescent periods on the average than the injured workman who is well insured. The surgeon in charge should have full say as to when an injured person should return to work and should not be harassed or influenced by claim adjusters, enthusiastic foremen or uncooperative employers. Shorter disability, in many instances, will result, as far as statistics are concerned, through the cooperation of employers who will provide lighter work temporarily which is compatible with the convalescent period. Statistics obtained under these circumstances are misleading, at least as far as the actual reparative period is concerned.

DR. P. A. DAVIS, Akron, Ohio: Our statistics are based entirely on our own work. We have complete control of all of our patients. We have very good cooperation, and when we say a man is ready to return to work, the foreman and labor department make arrangements so that he is given either his original job or some other job which will net him earnings equivalent to the regular state compensation, or considerably more.

THE TREATMENT OF ESSENTIAL HYPERTENSION *

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The criteria that constitute the disease now spoken of as essential hypertension are not at all clear. It has become customary in clinical medicine to regard all persons with an arterial tension above normal as having potential hypertension. These are persons who normally exhibit a blood pressure above the average; the record given in table 1 is an example of a blood pressure reading of this sort.

TABLE 1.—*Blood Pressure in Case 1*

L. J. M., a man, aged 33 had a blood pressure constantly above normal; the readings did not rise in the course of five years. Attention is called to the high pulse pressure. In February, 1928, definite signs of hyperthyroidism developed (basal metabolic rate, plus 24 per cent).

Date	Blood Pressure		Pulse Pressure
	Systolic	Diastolic	
1923			
Jan. 23	149	81	68
May 28	139	86	53
1924			
Feb. 4	140	84	56
Oct. 3	138	70	68
1925			
Jan. 7	132	78	54
Aug. 3	126	84	42
1926			
Jan. 20	128	84	44
Nov. 26	146	82	64
1927			
Mar. 23	144	86	58
July 21	140	84	56
1928			
Feb. 23	132	90	42
Mar. 9	148	78	70

The patient for whom the readings are recorded developed evident signs of hyperthyroidism after five years of observation. It may be that the high systolic, normal diastolic and increased pulse pressure, so characteristic of excessive activity of the thyroid gland, were throughout effected by this internal secretory disturbance, which did not manifest itself until some time later by the usual clinical signs of the condition.

Table 2 is another instance of prolonged blood pressure elevation. This record differs from the previous one in that the diastolic as well as the systolic figures

TABLE 2.—*Blood Pressure Records (Highest and Lowest of Each Year) in Case 2*

In a man, aged 50, the blood pressure was constantly high for no apparent reason; there was a tendency to overweight, though the blood pressure remained constant whether the weight was normal or 30 pounds (13.6 Kg.) above normal. Hyperglycemia was present.

Date	Blood Pressure		Date	Blood Pressure	
	Systolic	Diastolic		Systolic	Diastolic
1912	145		1923, July	140	98
1917	142	98	1924, January	148	98
1919, February	142	96	October	148	100
December	152	98	1925, March	140	92
1920, June	154	100	November	152	100
December	142	100	1926, April	152	102
1921, August	158	104	July	146	97
December	142	98	1927, January	142	98
1922, September	140	90	October	154	102
November	150	96	1928, April	142	101
1923, May	160	100	May	154	100

are increased. In this case, to a certain extent at least, is suggested the symptom complex of hyperepinephrinemia recently reviewed by Oppenheimer and Fishberg;[1] namely, a tendency to obesity, a high blood sugar and a high blood pressure.

The point I wish to emphasize in these two cases is that the characteristic blood pressure of any individual may be higher than the average. It may be just as difficult to distinguish between the normal and essential hypertension here as it is to decide in a very tall person whether an acromegaly exists or not.

There is one great difference between the type of hypertension described in the two cases mentioned and the disease essential hypertension. During five years in one instance and sixteen years in the other, the blood pressure did not rise. Table 3 furnishes an illustration of a rise of blood pressure from an innocent level in 1919 and 1920 to a dangerous height in 1925, and a little higher in the two succeeding years. There evidently is a dissimilarity of blood pressure control in the cases recorded in tables 2 and 3. True cases of essential hypertension are prone to exhibit such an increasing arterial tension from year to year.

These facts have a direct bearing on treatment in this respect: every instance of elevated blood pressure, however slight, should be observed every few months; active treatment need not be instituted until certain levels are reached or secondary symptoms develop. From clinical experience I find that a systolic pressure of 170 and a diastolic of 100 may be considered as the upper readings which do not entail secondary changes of note as a rule. It has been frequently accentuated that the diastolic values are of much the greater importance, as they represent the constant resistance which the heart is forced to overcome and the persistent strain which the arteries must withstand.

Essential hypertension, the hyperpiesia of Clifford Allbutt,[2] the hypertensive cardiovascular disease of Theodore Janeway, is a disease of unknown etiology characterized by a persistent and increasing elevation of both systolic and diastolic blood pressure; the rise in

* Read before the Section on Pharmacology and Therapeutics at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Oppenheimer, B. S., and Fishberg, A. M.: Association of Hypertension with Suprarenal Tumors, Arch. Int. Med. **34**: 631-644 (Nov.) 1924.

2. Allbutt, Clifford: Diseases of the Arteries, London, the MacMillan Company, 1915.

blood pressure entails secondary changes in the heart, the cerebral arteries and less commonly the kidneys, any of which may prove fatal. The importance of these effects to the white race may be gathered from a recent contribution by Fahr,[3] in which he shows that 23 per cent of all deaths in persons over 50 years of age and older is the result of hypertension. Consequently, it is of the utmost importance to treat this condition to the fullest extent with the means at hand and to study it so that therapy may be more successful in the future.

TABLE 3.—*Blood Pressure in Case 3*

Y., a man, aged 40, in 1920, showed a constantly rising blood pressure in spite of various forms of treatment, including adequate rest, lessened responsibilities, good hygiene and various other measures.

Date	Blood Pressure		Date	Blood Pressure	
	Systolic	Diastolic		Systolic	Diastolic
1919			1924		
Nov. 8.....	158	110	April 9.....	158	124
1920			June 6.....	176	118
June 6.....	146	98	Nov. 10.....	182	120
Dec. 3.....	150	110	1925		
1921			April 6.....	188	132
Mar. 25.....	154	106	Aug. 10.....	194	130
Sept. 27.....	156	110	Dec. 23.....	198	146
Dec. 10.....	170	120	1926		
1922			Jan. 9.....	203	154
Feb. 27.....	158	100	Mar. 8.....	202	134
Sept. 29.....	178	130	Nov. 3.....	196	128
Dec. 16.....	165	124	1927		
1923			Jan. 13.....	204	148
Feb. 15.....	171	129	July 18.....	185	144
Sept. 4.....	168	117	Sept. 21.....	210	150
Dec. 8.....	151	126	Nov. 11.....	178	123

The practical therapy of essential hypertension is really very well known, though there is an undercurrent of dissatisfaction with the present situation that leads many to advocate specific cures and others to discard the facts at hand and offer no treatment, while relatively few take advantage of the existing state of knowledge and carry on with these patients as best they can.

Specific cures there are none. The treatment of so-called intestinal intoxication, the low protein diets, drugs of various sorts, a number of serums, the restriction of sodium chloride, the loss of weight in the obese, all have proved to be of no value in this regard. The liver extract of Major [4] has not yielded constant results for the internist, though recently certain researches have appeared that indicate a possible use for this preparation in the hypertension of the toxemias of pregnancy.

The best available means at the present moment to reduce the blood pressure in essential hypertension is to obtain nervous relaxation in the patient. This is glibly said but hard to accomplish, for it means untold effort on the physician's part and limitless cooperation by the patient. Occupation, home life, social obligations and many other factors must be studied and their rough corners rounded off. There was one middle aged woman who was considered a thereapeutic triumph under certain curative measures; her blood pressure dropped from 210 to 150; later it was found that no restrictions of any sort were of avail except a life free from social activities and the stress of service on community committees. It required about one year's observation, entailing two "cures" at a sanatorium, one prolonged trip to the South and a major operation, to establish the simple effective treatment. A similar instance is described in table 4. It is worthy of note that in this case one month was required before the blood pressure became lower. This furnishes an example of how necessary prolonged control periods are before the effect of a "cure" for hypertension can be established. The lack of such control periods rob the reports of Allen and Sherrill,[5] and more recently of Vogel,[6] in regard to the effect of salt-free diets, of much of their value.

Such fortunate results are not reached in every case. In certain instances, as in patient Y in table 3, the condition is progressive in spite of everything than can be done.

The regulation of occupation, family relations and other personal affairs must remain an individual matter. It is a good plan to have the patient visit the office once a week and talk over such topics for a few minutes. Eventually a way out may suggest itself.

A good routine of relaxation is one or two hours' rest after lunch and at least eight hours in bed at night. In severe cases, one day a week in bed may be recommended. At times, more or less prolonged rest in bed may be of value.

It is gradually becoming appreciated that exercise within the limits of cardiac power is beneficial. Apparently sedentary individuals are more subject to hypertension than physically active persons.[7] The late Theodore C. Janeway found that even strenuous physical exertion, such as tennis, was helpful in younger persons. Moderate exercise as walking, golfing or restricted setting-up calisthenics serve to keep the voluntary and cardiac muscles in better condition and promote more satisfactory well being than if a more sheltered regimen is pursued.

The relation of diet to hypertension has been under scrutiny for many years, until today it almost seems as though fairly definite rules could be formulated in regard to it.

The most important dietary restrictions are those in relation to the fats and carbohydrates. These foods are

TABLE 4.—*Blood Pressure in Case 4*

Mrs. T. L., aged 68, had had hypertension for some time past, and had been treated by a member of the family. When the medical responsibility was transferred to another physician, the blood pressure diminished in a satisfactory way. No other therapeutic measures of note were instituted. Approximately one month elapsed before the blood pressure began to diminish.

Date	Blood Pressure	
	Systolic	Diastolic
1925		
October 9.....	192	110
14.....	194	106
21.....	204	106
28.....	196	99
November 5.....	188	87
19.....	169	81
December 4.....	154	74
1926		
April 12.....	162	78
30.....	150	94
1927		
February 4.....	148	80
April 27.....	142	76

the main sources of obesity, which, in turn, according to Fisk,[8] was accompanied by an increase in blood pressure in 78 per cent of persons who were 20 per cent or more overweight. Whatever our views may be in regard to the parallelism between reducing weight and drop in

3. Fahr, G. E.: Hypertension Heart, Am. J. M. Sc. **175**: 453-472 (April) 1928.
4. Major, R. H.: The Effects of Hepatic Extract on High Blood Pressure, J. A. M. A. **85**: 251-253 (July) 1925.
5. Allen, F. M., and Sherrill, J. W.: Treatment of Arterial Hypertension, J. Metab. Research **2**: 429-545 (Oct.) 1922.
6. Vogel, S. A.: Arterial Hypertension and Its Treatment, New York State J. Med. **28**: 318-322 (March 15) 1928.
7. Foster, N. B.: Treatment of Hypertension, J. A. M. A. **79**: 1089-1094 (Sept. 30) 1922.
8. Fisk, E. L.: The Relationship of High Blood Pressure to Other Impairments, Am. Med. **18**: 446-454 (June) 1923.

blood pressure, its importance becomes evident when the fact is recalled that the greatest danger to the hypertensive patient is cardiac failure. It is clear that obesity must be done away with at all hazards under the circumstances and, when indicated, a restriction of the carbohydrates and fats, an antiobesity diet, is distinctly in order.

Table 5 gives the details of a case that is extremely interesting in this connection. The patient suffered from migraine, abdominal distention, headache, and increased systolic pressure when eating an average amount of starches; he was not overweight. On a carbohydrate-free diet these symptoms disappeared and returned immediately when the habitual food was resumed. This shows the effect a high starch diet may have in some persons; it also serves to demonstrate the advantage of studying the problem of hypertension in each individual, since, although this patient was relieved of his symptoms, similar therapeutic efforts in other instances have not yielded comparable results.

TABLE 5.—*Blood Pressure in Case 5*

F. R., a man, aged 52, had migraine, gaseous distention of the abdomen and increased blood pressure whenever starchy food was eaten.

Date, 1926	Blood Pressure: Systolic	Blood Pressure: Diastolic	Comment
Feb. 2	152	96	General diet
10	150	98	General diet
23	126	90	Starch-free diet since Feb. 15, 1926
March 10	134	84	Starch-free diet continued
16	130	86	Starch-free diet continued
25	126	79	Starch-free diet continued
April 2	135	94	Starch-free diet continued
13	138	86	Starch-free diet continued
27	132	84	Starch-free diet continued
May 21	138	86	Starch-free diet continued
June 16	154	96	Taking some starches; headaches and gaseous distention of abdomen have returned with the taking of starch

The idea that proteins are harmful, over short periods of indulgence at least, has been done away with (Mosenthal [9] and Strouse and Kelman [10]). In regard to the influence of prolonged unrestricted protein feeding, there is no reason given as to why it should influence blood pressure. There are two observations that serve to throw some light on this problem. One is that of Lieb,[11] which showed that Stefansson, the arctic explorer, aged 43 had lived for a number of days, totaling nine years, on an exclusive meat diet, and at the end of that time he was in good condition, with a blood pressure of 115 systolic and 55 diastolic. The other publication on this subject is that of Thomas,[12] who finds that the Greenland Eskimo, on a purely carnivorous diet, does not exhibit any increased tendency toward vascular, hypertensive and renal disease. A very low protein diet induces anemia and physical weakness [13] (Benedict). The statement therefore seems warranted that all forms of protein, whether from fish, red meat or white, eggs or any other source, are permissible in the usual amounts; if the hemoglobin and red blood cell count rise above the normal, which, of course, occurs rarely, the proteins should be curtailed and only then. In the event of the existence of nephritis, the proteins in the food must be restricted in direct ratio to the rise in the blood urea; the presence of albuminuria in itself is of no more value as a guide than is the blood pressure.

How quickly the blood pressure rises in a case of malnutrition as the general condition is improved is shown in table 6. The patient had been given an extremely low protein diet for a long time, and as a result he had developed a secondary anemia and marked lassitude and weakness. The addition of proteins to his diet remedied these symptoms, but at the same time elevated the blood pressure. A necessary choice must be made between two evils under these circumstances and the physician must perforce be the judge of the best course to pursue.

Fluids taken in amounts up to 6 liters a day do not influence blood pressure.[14] As the usual amount of fluid advocated as rational for the twenty-four hours is from 1.5 to 2 liters, it is evident that no restrictions are indicated in this regard. Warnings should rather be considered necessary to insure an adequate fluid intake to promote proper elimination from the kidneys and bowels.

Salt restriction does not lower blood pressure, as was originally claimed for it. However, the limitation of sodium chloride has a distinctly beneficial effect on cardiac complications; palpitation, dyspnea, angina pectoris, edema and anasarca all are often remarkably improved. The extensive records of Allen and Sherrill [5] show this very well. It has been known for a long time, though not generally appreciated, that, when passive congestion exists, the elimination of salt by the kidneys is proportionately lowered; in severe cases only a trace of sodium chloride appears in the urine. When myocardial insufficiency is present, no matter how slight it may be, salt restriction is indicated and will aid materially in reducing the subjective as well as objective symptoms.

The cleansing of the intestinal canal by excessive purgation and irrigation has found its advocates here as well as in other conditions. Alvarez and his co-workers [15] have rendered a real service in dispelling the last of the traditions by which the treatment of hypertension has been guided. Their observations show that constipation and so-called intestinal autointoxication do not bear any relation to hypertension. This does not mean that the bowels are to be neglected. There should be regulated catharsis, so that there is a daily evacuation and, what is most important, no straining at stool. Such efforts are often responsible for apoplectic attacks.

TABLE 6.—*Blood Pressure in Case 6*

J. S. M., a man, aged 50, 33 pounds (15 Kg.) underweight, showed malnutrition and hemoglobin of 66 per cent; the blood pressure rose as nutrition improved.

Date, 1927	Blood Pressure: Systolic	Blood Pressure: Diastolic	Weight, Pounds	Hemoglobin, per Cent
May 11	162	91	150	66
27	180	118	152	73
July 11	198	118	155	
27	175	106	157	
October 1	206	118	157	
7	177	106	157	78

9. Mosenthal, H. O.: Influence of Protein Food on Increased Blood Pressure, Am. J. M. Sc. **160:** 808 (Dec.) 1920.
10. Strouse, Solomon; and Kelman, S. R.: Protein Feeding and High Blood Pressure, Arch. Int. Med. **31:** 151-163 (Feb.) 1923.
11. Lieb, C. W.: Effects of Exclusive, Long-Contained Meat Diet, Based on History, Experiences and Clinical Survey of Vilhjalmur Stefansson, Arctic Explorer, J. A. M. A. **87:** 25-26 (July 3) 1926.
12. Thomas, W. A.: Health of a Carnivorous Race, J. A. M. A. **88:** 1559-1560 (May 14) 1927.
13. Benedict, F. G., and others: Human Vitality and Efficiency under Prolonged Restricted Diet, publication 281, Carnegie Institution of Washington, 1919.
14. Orr, J. B., and Innes, I.: Effect on Arterial Hypertension of Increased Fluid Intake, Brit. J. Exper. Path. **3:** 61-71 (April) 1922.
15. Alvarez, W. C.; McCalla, R. L., and Zimmerman, A.: Hypertension and Constipation: Statistical Inquiry, Arch. Int. Med. **58:** 158-166 (Aug.) 1926.

The reason for the attempts to lower blood pressure is to prevent the sequelae which hypertension entails. These are the fatal elements in this disease and follow with a rapidity and certainty in direct proportion to the height of the diastolic blood pressure. The statistics in regard to the cause of death in this condition formulated ten and fifteen years ago remain unchanged in the light of more recent tabulations. In by far the greatest number of cases, cardiac failure closes the picture; arteriosclerosis is responsible for apoplexy in many cases and for a primary contracted kidney and uremia in a few instances.

As far as warding off a threatened apoplectic attack is concerned, there is little to be done besides taking the measures previously mentioned to control the blood pressure; the only treatment that can be accorded an advancing arteriosclerotic process in the kidney is to adjust the diet to the state of existing renal function and, what is equally important, not to attempt to anticipate such occurrences by excessive restriction of protein foods. Such restriction does not accomplish any good for the kidneys, and the nutrition and general well being of the patient suffer to no purpose.

The treatment of the heart is exceedingly necessary in essential hypertension and is productive of very satisfactory results. The use of digitalis meets with a very good response, and the cardiac muscle is usually capable of maintaining the circulation fairly adequately for a long time even after signs of decompensation have begun to manifest themselves. This is due to the fact that the heart muscle is usually not the seat of myocardial degeneration as it is prone to be in rheumatic endocarditis. At least this has been my experience, and that of Dr. Robert Levy,[16] though there are a variety of opinions on the subject. Cardiac failure in essential hypertension should be accorded the same drug, dietetic and hygienic therapy as when it occurs as a complication of other diseases; the main point to bear in mind is that it should be sought for frequently and conscientiously and treated as soon as the first signs or symptoms of an impaired circulation are noted.

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ABSTRACT OF DISCUSSION

DR. JOSEPH L. MILLER, Chicago: I think it is most unfortunate that these people with hypertension, who represent a rather large group, have certain regulations inflicted on them which, while of no benefit, yet constantly remind them that they are not well. I think the restriction of salt is a hardship without results. To take these people entirely off meat reminds them that something is the matter every time they sit down to the table. I see no reason why they shouldn't smoke moderately. I think they should attempt to keep down their weight because of the increased burden on their hearts. Strenuous physical exertion is a danger to the heart. In recent years I have usually confined my advice to those patients, outside of weight and strenuous exercise, to cultivate calmness, just as Dr. Mosenthal has stated. If he is a busy business man he should shift some of his burden. My advice to my patients is to cultivate calmness, as it is the essential thing in the treatment of hypertension.

DR. R. C. LOGEFEIL, Minneapolis: Two years ago while in Berlin I became interested in the apparently good results obtained in some clinics there by the use of sodium sulphocyanate in the reduction of blood pressure in essential hypertension. Since then I have used this drug in twenty-four cases. In twenty-two of these I noted a favorable action, the systolic blood pressure being reduced on an average of about 55 points, and the diastolic about 35 points. By using rational doses of this drug I was able to keep the blood pressure in twenty-two cases below 170 systolic and 100 diastolic. If from more careful observations and very carefully controlled studies we can prove that this drug can keep the blood pressure below this level, it will be very much worth while. I should like to ask Dr. Mosenthal whether he has had any experience in the use of this drug.

DR. DANIEL J. GLOMSET, Des Moines, Iowa: I want to emphasize the great importance of controls in order to evaluate any form of treatment. The great difficulty with all of these reports of results of various treatments which have been published heretofore is that they do not show what the controls would do. Essential hypertension is a disease that lasts a lifetime. It begins in from 3 to 7 per cent of the cases at the age of 15 to 18. I have tried Allen's salt-free diet in a number of control cases in which I have known the level of the blood pressure for years, and it reduced the blood pressure. There is no question about it. But it does it by producing a distinct weakness. It is a malnutrition treatment. But that isn't the only object. It seems to be necessary for these individuals to maintain a higher level than normal in order to carry on their work so that one has to treat them with the view of keeping them as nearly normal as possible and at the same time try to prevent such disasters as apoplexy and cardiac failure.

DR. MOSES BARRON, Minneapolis: Some of the points brought out are very gratifying because they show that we need not restrict the diet too much in order to bring about certain results. Patients should never be subjected to unnecessary hardships. Most of the strict dietary regulations have proved failures except in cases in which there was need for reduction in weight. Dr. Logefeil has spoken of his experience with sodium sulphocyanate. When treating cases of hypertension, the majority will either improve or remain stationary for a long time as soon as we teach them to be calm and take more rest so as to be free from nervous tension and strain. I have used this drug in a small group of cases which did not respond well to the ordinary regimen, and I found that this type of case is not benefited. Many of these patients had had high blood pressure for a long time. In the general run of cases that had not been previously treated, sodium sulphocyanate did bring down the blood pressure in most of them, but the same results have been obtained without the use of the drug. The best therapeutic measure in hypertension is to regulate the patient's mode of life. He should be instructed to develop a calm state of mind, to avoid excessive physical exertion as well as mental strain, and to restrict the diet only enough so as not to overburden his metabolism. About 1 Gm. of protein per kilogram of body weight a day can always be allowed. The pathogenesis of this condition still remains obscure, except, perhaps, that inheritance is the greatest predisposing factor.

DR. ROBERT L. LEVY, New York: There is just one aspect of this problem which Dr. Mosenthal probably did not have time to touch on. He said that the safeguarding of the heart is an important feature in the management of these cases, and before the onset of heart failure it is the proper balance between exercise and rest which is the most vital problem for the individual. I should like to ask him how he would approach that problem.

DR. GEORGE L. WALDBETT, Detroit: Dr. Mosenthal mentioned a case of migraine in which the elimination of starchy foods improved the symptoms. I have had experience lately with a family with asthma and hay-fever. The father had it, the grandfather had edema, and five children had essential hypertension. It is certainly suggestive.

DR. H. O. MOSENTHAL, New York: The diet mentioned was the salt-free diet which has been used so extensively, especially a few years ago. Sodium thiocyanate has been used widely, I believe at first in Germany, and subsequently in this country. The results obtained with this medication are not conclusive at the present moment. Exercise is an important factor in keeping these patients in condition. Some French observers, and a few years ago Dr. Foster before this association, stated that they found a better condition of their patients and apparently an increase in the length of life and a lowered

16. Levy, Robert: Personal communication to the author.

blood pressure when exercise was indulged in properly. The limitations for exercise I believe should be those dictated by the condition of the heart. It should be sufficiently vigorous to give satisfaction to the patient, provided it does not induce any signs of myocardial insufficiency. This obviously means that it has to be regulated according to the age and to the cardiac condition of the patient. The late Theodore Janeway made the observation that some of his patients with hypertension did better with vigorous exercise, such as a hard game of tennis, than if they were limited to walking or mild forms of exercise. It may take too long to go into the etiologic phase of the situation, but it is an extremely interesting one. Possibly, we can regard hypertension as the result of two pathologic, physiologic processes. The one is a peripheral vasoconstriction with secondary increased tone of the larger blood vessels; the second is a primary increased tone of the larger blood vessels with secondary and compensatory constriction of the peripheral vessels. The first of these is the usual case of asthma and other allergic conditions; such patients have a widely fluctuating blood pressure; they also have Raynaud's disease. They differ from the constant high blood pressure that is characteristic of the usual case of essential hypertension.

PRENATAL SYPHILIS

EFFECTS OF ANTEPARTUM TREATMENT *

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Williams [1] has stated that he believes more lives can be saved by the recognition and treatment of syphilis early in pregnancy than by any other single agent. His analysis of deaths of premature and full term babies, including both stillbirths and deaths during the first two weeks of life, has demonstrated the fact that syphilis is the cause of one third of all cases and is responsible for almost as many deaths as dystocia, the toxemias and prematurity combined. Excellent articles have appeared in the literature to show that the high fetal and infant mortality in syphilitic families can be greatly reduced by antepartum treatment. However, these articles, for the most part, have included all syphilitic mothers, regardless of the age of their infection. Since the untreated syphilitic woman frequently gives birth to normal children after her infection has been present five years or longer, I thought it would be of value and interest to record the effects of treatment on patients whose syphilis is of less than five years' duration.

TABLE 1.—*Results of Pregnancies in Both Treated and Untreated Patients*

	Untreated		Treated	
	Number	Per Cent	Number	Per Cent
Number of patients	60		203	
Abortions and miscarriages	14	23.3	12	5.9
Stillbirths	15	25	17	8.4
Living children, premature and full term, syphilitic and nonsyphilitic	31	51.7	174	85.7
Apparently normal children	13	21.7	132	65
Syphilitic children, living and dead	18	30	42	20.7

EFFECTS OF TREATMENT ON SYPHILITIC PATIENTS

The records of about 700 syphilitic women who had been pregnant were reviewed, and of this number 263 fell in the group I wished to study. Only nine of this number were cases of five years' duration, and they were included because the women had never given birth to a living child, although each had been pregnant several times. The average duration of syphilis in the group was 1.8 years. The patients were, for the most part, young, the average age being 20.9 years. Of the patients, 93.9 per cent were negroes, which accounts for the low age average. Such a low age average would not be expected in a similar group of white women, and because the patients were young, only 38 per cent had had previous pregnancies.

TABLE 2.—*Total Syphilitic Fetuses, Syphilitic Infants and Apparently Normal Children*

	Untreated		Treated	
	Number	Per Cent	Number	Per Cent
Number of patients	60		203	
Abortions, miscarriages, stillbirths, syphilitic children	47	78.3	71	35
Apparently nonsyphilitic children	13	21.7	132	65

Of the 263 patients, 203 received antepartum treatment and sixty received no treatment before delivery. Thus, having both treated and untreated cases in a group that were in every other way similar, there was afforded an excellent means for comparison, and an estimation of the effects of treatment could readily be made. The average time for beginning the treatment was about the sixteenth week of pregnancy and thirteen weeks was the average amount, including 2.3 Gm. of arsphenamine and 0.5 Gm. of mercuric salicylate. Both drugs were well tolerated and many patients received treatment throughout the latter part of their pregnancy and up until the time of delivery. The rationale of this procedure might be questioned because of the strain thrown on already well burdened excretory organs; but with a careful check of the urine, blood pressure and subjective symptoms, the danger is apparently slight.

Table 1 shows the results of the pregnancies in both treated and untreated patients. Abortions and miscarriages occurred about four times as frequently in the untreated as in the treated patients, while stillbirths were about three times as frequent, and only about one half, or 51.7 per cent, of the untreated patients were delivered of living children. Of this 51.7 per cent, about three fifths were syphilitic children. Compared with these figures, 85.7 per cent of the treated patients gave birth to living children and of these about one fourth were syphilitic.

Table 2 gives a comparison of the abortions, miscarriages, stillbirths and syphilitic offspring, grouped under one heading. The total number of syphilitic tragedies in the untreated group is 78.3 per cent, compared with 35 per cent in the treated patients, and the apparently normal nonsyphilitic children 21.7 per cent as compared with 65 per cent.

The children included in this report were tested serologically at birth and after six weeks. The percentage of apparently normal children in both groups is probably higher than a longer period of observation and further serum reactions would warrant. I realize that

* From the Department of Dermatology and Syphilis, University of Tennessee College of Medicine.

* Read before the Section on Dermatology and Syphilology at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Williams, J. W.: The Significance of Syphilis in Prenatal Care and in the Causation of Fetal Death, Bull. Johns Hopkins Hosp. **31**: 141 (May) 1920.

our routine is not a sufficient criterion on which to pronounce a child nonsyphilitic, but the number that escape detection no doubt is small. Many of these children have been under observation for several years, but we have the same difficulty experienced by other free clinics in getting complete cooperation of the patients.

The advantages of starting the treatment early in pregnancy are shown in table 3. Of the twenty patients starting treatment during the first month, all gave birth to apparently normal children. The percentage of normal children decreases as the treatment is delayed. About one half of the patients began their treatment before the end of the fourth month, but in this group appear only about one fifth of the syphilitic children, interrupted pregnancies and stillbirths.

The amount of treatment the patients received (average, 2.3 Gm. of arsphenamine and 0.5 Gm. of mercuric salicylate) was relatively small, although larger than the amounts given in most other series of cases reported in the literature. Bartholomew's [2] patients received about one half of this amount, and Beck's [3] about the same amount of arsphenamine without any mercury. But in these reports and those of Findlay,[4] Williams,[1] Lawrence [5] and others the results of treatment were remarkable. The amount of treatment, which ordinarily would seem meager, protects, in a large percentage of cases, both the mother and her offspring.

TABLE 3.—*Time at Which Treatments Were Begun, with Results of Pregnancies*

Treatment Begun	Number	Living Children		Abortions, Miscarriages, Stillbirths
		Nonsyphilitic	Syphilitic	
First month	20	20	0	0
Second month	24	22	1	1
Third month	18	16	2	0
Fourth month	43	32	6	5
Fifth month	25	13	7	5
Sixth month	40	18	13	9
Seventh month	29	9	12	8
Eighth month	4	2	1	1
Totals	203	132	42	29

It is generally agreed that the pregnant woman, with her defense mechanism at its highest development, is more amenable to treatment than is the nonpregnant woman or the syphilitic man. Brown and Pearce [6] demonstrated this clinical observation experimentally in their work with rabbits when they showed that the course of syphilis is greatly altered and of a milder nature in the pregnant than in the nonpregnant animal. Findlay [4] believes that treatment continued through one pregnancy is sufficient protection for subsequent pregnancies. On the other hand, Jeans [7] found that subsequent pregnancies required treatment for protection of the fetus. In reviewing our records, several illustrative cases were found to show that long continued treatment before and during pregnancy was not always a protection for future pregnancies. One patient receiving five months' treatment with her first pregnancy gave birth to a normal child and three years later without treatment gave birth to a syphilitic child. Another patient with syphilis of many years' standing received treatment over a period of five years, became pregnant, stopped her treatment, and gave birth to a six month syphilitic fetus. One would feel that treatment should be given with each pregnancy even in the presence of a negative Wassermann reaction. The older the syphilis and the greater the number of previous pregnancies, the smaller the amount of treatment that is probably necessary to protect the offspring.

2. Bartholomew, R. A.: Syphilis as a Complication of Pregnancy in the Negro, J. A. M. A. **83**: 172 (July 19) 1924.
3. Beck, A. C.: A Preliminary Report on the Treatment of Syphilis Complicating Pregnancy, Am. J. Obst. & Gynec. **2**: 416 (Oct.) 1921.
4. Findlay, L.: The Antenatal Treatment of Congenital Syphilis with Salvarsan and Mercury, Brit. M. J. **2**: 887 (Nov. 26) 1921.
5. Lawrence, J. S.: Prevention of Congenital Syphilis by Treating Mother During Pregnancy, J. A. M. A. **84**: 432 (Feb. 7) 1925.
6. Brown, W. H., and Pearce, Louise: On the Reaction of Pregnant and Lactating Females to Inoculation with Treponema Pallidum: Preliminary Note, Am. J. Syph. **4**: 593 (Oct.) 1920.
7. Jeans, P. C.: Syphilis and Its Relation to Infant Mortality, Am. J. Syph. **3**: 114 (Jan.) 1919.

CONCLUSIONS

A marked reduction of fetal and infant motality can be obtained in syphilitic families by treating the mother during gestation.

The earlier the treatment is begun, the greater the probabilities for a normal child.

Even in recently acquired syphilis, the chances for healthy offspring are good with proper antepartum treatment.

Syphilitic women should be treated during each pregnancy.

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ABSTRACT OF DISCUSSION

DR. JEFFREY C. MICHAEL, Houston, Texas: When one recalls that in the negro race syphilis is the greatest cause of fetal death, and that in the white race it is exceeded only by dystocia as the greatest cause of fetal death, nothing more need be said about the importance of the subject. I am sorry that I cannot present statistics on this subject, but the records in the venereal disease clinic do not correlate with those of the department where the patients were delivered. Some generalities may be permitted. First, the small amount of treatment that seems necessary to protect the fetus, and the amount of treatment the pregnant woman will stand are of importance. We try to begin treatment as early as possible, and it seems from the experience we have had that if we can get in two-thirds the amount of treatment that we would give a nonpregnant woman during the same period, we can feel reasonably safe about the protection of the child. We have certainly pushed the treatment somewhat in some cases and have had a few reactions which have been serious, so I would warn about careful supervision of treatment during pregnancy.

DR. CLEMENT H. MARSHALL, Memphis, Tenn.: I think that the reactions are not as common as might be expected, but in those that occur we have to watch the urine, the blood pressure and the subjective symptoms, carefully, as Dr. Michael brought out.

Foundation of Behaviorist School of Psychologists.—The question of man's adaptation to his environment is one which is constantly before us, and directly or indirectly is one which is perpetually debated. During the past decade this response of man to stimuli has become the mainstay of the behaviorist school of psychologists. The protagonists of this school, which definitely discards consciousness as a psychological concept, have seized on the work of Pavlov and have, on the basis of conditioned reflexes, attempted to raise a new psychology, a new interpretation of man, his emotions, his interests, and his varied activities. It behooves us, then, to examine the nature of these reflexes and their physiological bearing. We all, of course, realize that our response to our environment is intimately linked with the integrity of the nervous system, but, owing to the limitations of our methods of investigation, our progress towards any adequate solution of the how and why has been strikingly small. The advance of physiological research into the mode of activity of practically all organs of the body with the exception of the brain has, in these last decades, been very marked, although I do not for a moment pretend that the physiological findings are either final or immutable.—Cathcart, E. P.: Conditioned Reflexes, *Glasgow M. J.*, August, 1928.

BACTERICIDAL ACTION OF MERCUROCHROME-220 SOLUBLE AND IODINE SOLUTIONS IN SKIN DISINFECTION

PRELIMINARY REPORT *

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The experiments here reported form a part of a general investigation undertaken at the suggestion of the medical supply division of the army with a view to securing, if possible, an antiseptic procurable from our own natural resources and possessing the same germicidal effectiveness as iodine, or greater effectiveness, for the disinfection of local tissues, including the unbroken skin, open wounds and mucous membranes.

TABLE 1.—*Bactericidal Action in Vitro of Mercurochrome and Iodine Solutions on Certain Pathogenic Bacteria—Cultural Results* *

Solution	Staphylococcus Aureus "C" and "209"			Streptococcus Pyogenes "Thomas"			Streptococcus Scarlatinae "Dick I"			Escherichia Coli "McG."			Bacillus Anthracis (Spores)					
	1 Min.	5 Min.	10 Min.	1 Min.	2½ Min.	5 Min.	1 Min.	2½ Min.	5 Min.	1 Min.	5 Min.	10 Min.	1 Hr.	2 Hr.	3 Hr.	4 Hr.	5 Hr.	10 Hr.
Mercurochrome, 2% aqueous	+	+	+	+	—	—	+	+	+	—	—	—	+	+	+	+	+	+
Mercurochrome, 2% alcohol-acetone	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+
Control, alcohol-acetone	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	+
Mercurochrome, 5% alcoholic	—	—	—	—	—	—	+	—	—	—	—	—	+	+	+	+	+	+
													+	+	+	—	—	—
Iodine, 3.5% alcoholic	—	—	—	—	—	—	—	—	—	—	—	—	+	+	+	+	+	—
Tincture of iodine, U. S. P.	—	—	—	—	—	—	—	—	—	—	—	—	+	—	—	—	—	—
Control, water	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+

* In this table — indicates no growth, and + indicates growth of the test organism.

The phase of the general search for effective iodine substitutes considered in this paper deals with the relative bactericidal effectiveness of various recommended mercurochrome-220 soluble and iodine solutions in disinfection of the unbroken skin. Mercurochrome was selected for these experiments mainly because of its widespread use as a general antiseptic in place of iodine and because of the various favorable reports regarding its germicidal qualities recorded in the recent medical literature.

Tinker and Sutton [1] reported that both mercurochrome and iodine solutions (5 per cent alcoholic) failed to kill most of the resistant, and some of the less resistant, pathogenic bacteria. Scott and Hill [2] called attention to the fact that, although aqueous solutions of mercurochrome (from 1 to 10 per cent) are bactericidal against certain organisms in vitro, such solutions are uniformly less efficient than iodine solutions in disinfecting skin surfaces. On the other hand, they asserted that a 2 per cent solution of mercurochrome in water, alcohol and acetone provided better skin sterilization than 3.5 per cent iodine. Later [3] they reported further studies on this question but no comparative tests with iodine were given. In 1925 I [4] observed, as have Scott and Hill, Reddish [5] and others, that while aqueous mercurochrome solutions exert some bactericidal action on certain bacteria in vitro, such solutions are relatively ineffectual as skin disinfectants. The commercial preparation sold to the general public and labeled "Mercurochrome, 2 per cent solution, Dibrom oxymercuri fluorescein, general antiseptic in place of iodine" has been especially considered in such tests. At the same time it was observed that a 5 per cent solution of mercurochrome in 50 per cent alcohol compared rather favorably with tincture of iodine in its action on some of the normal throat and skin organisms on skin surfaces, but that it was less effective in killing certain pathogenic spore-forming bacteria. The latter observation was substantiated by Reddish,[6] who reported that 5 per cent alcoholic mercurochrome solutions failed to kill *Clostridium tetani* and *Cl. welchii* dried on filter paper, in two hours. He also reported that tincture of iodine was decidedly better as it killed *Cl. tetani* in less than one hour, and killed *Cl. welchii* in a little more than thirty minutes in one test and in less than thirty minutes in another.

In the present study, both in vitro and actual skin disinfection experiments have been employed in determining the relative bactericidal action of various mercurochrome and iodine solutions, recommended for practical use, on certain pathogenic bacteria which may be of importance as skin contaminants. The following solutions were used: 1. Mercurochrome-220 soluble, 2 per cent aqueous solution, a commercial product obtained on the open market. The results obtained were checked with fresh 2 per cent aqueous solutions prepared in our laboratory. 2. Mercurochrome-220 soluble, 2 per cent alcohol-acetone aqueous solution, freshly prepared according to the formula of Scott and Hill: [7] 2 Gm. of mercurochrome dissolved in 35 cc. of distilled water, to which was added 55 cc. of 95 per cent alcohol and 10 cc. of acetone. 3. Mercurochrome-

TABLE 2.—*Effect of Mercurochrome and of Iodine Gauze on Surface Cultures of Bacteria*

	Diameter of Inhibition Zones Surrounding the Medicated Gauze on Solid Medium Cultures			
	Nutrient Agar Cultures		Blood Agar Cultures	
	Mercurochrome Gauze, Mm.	Iodine Gauze, Mm.	Mercurochrome Gauze, Mm.	Iodine Gauze, Mm.
Staphylococcus aureus	26	55	20	42
Streptococcus pyogenes	30	50	20	40
Streptococcus scarlatinae	..	..	20	43
Escherichia coli	20	38	16	30
Bacillus anthracis	28	60	20	50

* Assisted by George F. Luippold, Staff Sergeant, Medical Department, U. S. Army.

* From the Department of Preventive Medicine and Clinical Pathology, Army Medical School.

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1. Tinker, M. B., and Sutton, H. B.: Ann. Surg. **82**: 640-645 (Oct.) 1925; Inefficiency of Most of the Commonly Used Antiseptics, J. A. M. A. **87**: 1347-1350 (Oct. 23) 1926.
2. Scott, W. W., and Hill, Justina H.: J. Urol. **14**: 135-152 (Aug.) 1925.
3. Scott, W. W., and Hill, Justina H.: Internat. S. Digest **3**: 195-201 (April) 1927.
4. Simmons, J. S.: J. Infect. Dis. **39**: 273-285 (Oct.) 1926.
5. Reddish, G. F.: Personal communications to the author.
6. Personal communication to the author.
7. Scott and Hill (footnotes 2 and 3).

220 soluble, 5 per cent alcoholic solution, freshly prepared by dissolving 5 Gm. of mercurochrome in 100 cc. of 50 per cent alcohol. 4. Iodine, 3.5 per cent (half strength tincture) prepared by diluting U. S. P. tincture of iodine with an equal amount of 95 per cent alcohol. 5. Tincture of iodine, U. S. P. 6. Alcohol-acetone-water mixture, prepared by mixing 35 cc. of distilled water with 55 cc. of 95 per cent alcohol and 10 cc. of acetone, and used as a control on the alcohol-acetone mercurochrome solution.

The pathogenic bacteria used were *Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, Escherichia coli, Clostridium welchii* (spores) and *Bacillus anthracis* (spores).

IN VITRO EXPERIMENTS

The bactericidal action in vitro of mercurochrome and iodine solutions on fluid cultures of bacteria was determined by a procedure similar to that used by Scott and Hill[2] in 1925, with certain modifications. One cubic centimeter amounts of broth cultures of the test bacteria were mixed with 5 cc. amounts of the different antiseptic test solutions. After a definite period of time, 0.1 cc. of this drug-bacteria mixture was transferred to a tube containing 10 cc. of nutrient broth, from which a second transfer of 1 cc. was carried to a second tube containing 10 cc. of broth. Since in certain instances bacteriostatic action was observed even in this second broth dilution-culture, it was found desirable to control the experiment further by transferring 1 cc. of material from the latter to a third tube of broth and 1 cc. to a flask containing 100 cc. of broth. An additional check was made in each experiment by preparing similar dilutions of the chemicals in culture mediums and inoculating them with pure cultures of the test organism. The results obtained in these in vitro experiments are shown in table 1. The 2 per cent aqueous mercurochrome failed to kill *Staphylococcus aureus* in ten minutes, or *Streptococcus scarlatinae* in five minutes, but did kill *Streptococcus pyogenes* in two and one-half minutes and *Escherichia coli* in one minute. Each of the other solutions used, including the alcohol-acetone control, killed these organisms in one or two and one-half minutes. However, all three of the different mercurochrome solutions failed to kill the spores of *B. anthracis* in ten hours, while 3.5 per cent iodine killed them in ten hours in one test and in four hours in another, and tincture of iodine killed them in two hours.

The bactericidal and bacteriostatic action of dry mercurochrome and iodine gauze on bacterial cultures on solid mediums was determined as follows: Small squares of gauze impregnated by soaking in 3.5 per cent solutions of mercurochrome and iodine, respectively, and allowed to dry were placed on the surface of nutrient agar (3 per cent, p_H 7.6) and blood agar (5 per cent horse blood) plates, one hour after inoculation with the various test bacteria. After these cultures had been incubated at 37 C. for twenty-four, forty-eight and seventy-two hours, records were made of the diameter of the zones of bacterial growth inhibition surrounding each piece of medicated gauze. The results obtained in such a test with *Staphylococcus aureus* are shown in figure 1, and the results of tests with the other organisms are indicated in table 2.

This experiment was done, not because it was considered as an index of effective skin disinfection, but because tests of this kind have been submitted in the past as evidence of the germicidal value of various chemicals, including mercurochrome.

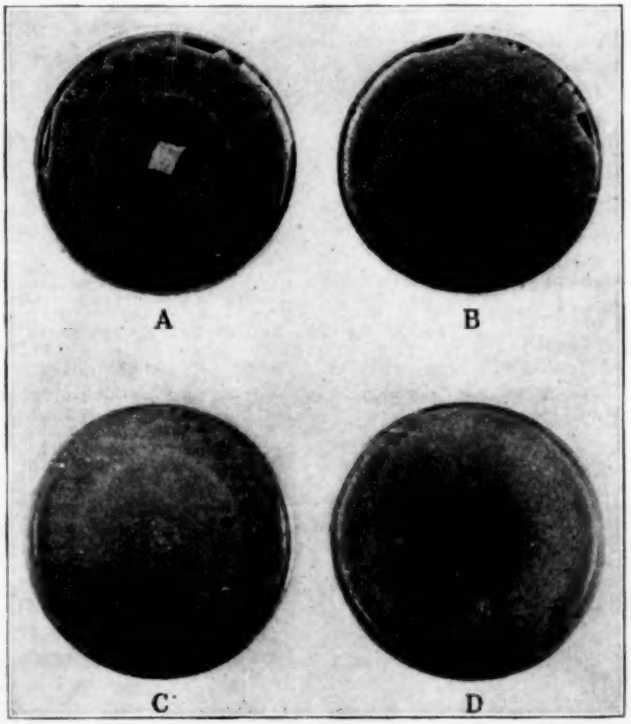

Fig. 1.—Effect of mercurochrome and iodine gauze on the growth of staphylococcus aureus on the surfaces of nutrient and blood agar plates: *A*, iodine gauze on blood agar; *B*, mercurochrome gauze on blood agar; *C*, iodine gauze on nutrient agar; *D*, mercurochrome gauze on nutrient agar.

The bactericidal action of the mercurochrome and iodine solutions on skin contaminated with different pathogenic bacteria was determined by two methods: (1) by making a series of surface and deep cultures from the skin at intervals after application of the solutions, and (2) by inoculating animals with pieces of the contaminated but treated skin and observing them for signs of specific infection.

In the various skin disinfection experiments with *Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, Escherichia coli* and *Clostridium welchii*, broth cultures of these organisms were rubbed uniformly over the dry shaven skin of rabbits. After the contaminated skin had dried for about one hour, it was marked off into 5 cm. squares, each of which was painted liberally with one of the antiseptic solutions. After definite periods of time, a series of cultures was made from the surface and deeper layers of the skin so treated. The first set of surface cultures was made by rubbing a sterile cotton swab, moistened in sterile broth, over a large portion of the painted area, and inoculating with this material a plate of solid medium (nutrient or blood agar) and a flask containing 100 cc. of broth. Then a smaller portion of the same treated skin surface was rubbed with a second sterile swab and a similar set of cultures made on solid mediums and in broth. Deep skin cultures were then made from a still smaller portion of the same area. The superficial layer of the skin was scraped off with a sterile scalpel until capillary bleeding occurred, and the epithelial scrapings thus obtained were placed in a sterile Petri plate and mixed with melted agar. Control cultures were made in a similar manner from untreated areas of skin in each experiment. The cul-

tures were incubated at 37 C. and observed for at least seventy-two hours.

As indicated in table 3, the results obtained in the skin disinfection experiments were as follows:

(*a*) The 2 per cent aqueous solution of mercurochrome failed to kill all *Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, Cl. welchii* spores and *E. coli,* on or in the skin, except in one test with the latter. This solution failed to disinfect the skin surface or deep layers of the skin in fifty-five out of fifty-six tests.

(*b*) The 2 per cent alcohol-acetone-aqueous solution of mercurochrome reduced the number of viable organisms to some extent but failed to kill all *Staphylococcus aureus* in twenty-four of twenty-six tests and *E. coli* in three of six tests, and in all instances failed to kill all *Streptococcus pyogenes, Streptococcus scarlatinae,* and *Cl. welchii* spores. This solution failed to disinfect the skin in forty-five of fifty tests.

(*c*) The 5 per cent alcoholic mercurochrome solution caused a similar slight reduction in bacterial number but, except in one test out of sixteen with *Staphylococcus aureus,* it failed to kill all the test organisms. This solution failed to disinfect the skin in forty-five of forty-six tests.

(*d*) The 3.5 per cent iodine solution killed *Staphylococcus aureus* in seven out of fourteen tests, *Streptococcus pyogenes* in four of six tests, *Streptococcus scarlatinae* in all tests and *E. coli* in five of ten tests. It failed to disinfect skin contaminated with *Cl. welchii* spores, but reduced the number of viable organisms in all of five tests. This solution disinfected the contaminated skin in twenty-two of forty-two tests, and reduced the numbers of viable organisms in the remaining twenty tests.

(*e*) Tincture of iodine, U. S. P., killed *Staphylococcus aureus* on and in the skin in twenty-six of twenty-eight tests, and killed *Streptococcus pyogenes, Streptococcus scarlatinae* and *E. coli* in all tests. It failed to disinfect skin contaminated with *Cl. welchii* spores in five of six tests, but even here was much more effective than the other solutions in reducing the number of viable organisms (fig. 3). Tincture of iodine disinfected the skin in fifty-one out of fifty-eight tests.

Certain spore forming bacilli which were normal skin contaminants of the experimental animals were not killed by any of the solutions used; however, tincture of iodine was more effective than any other solution in reducing the numbers of viable organisms (fig. 2).

TABLE 3.—*Skin Disinfection* *

Bactericidal action of mercurochrome and iodine solutions in the disinfection of rabbit skin previously contaminated with different pathogenic bacteria (summary of experiments).

	Staphylococcus Aureus						Streptococcus Pyogenes						Streptococcus Scarlatinae						Escherichia Coli						Clostridium Welchii			
	5 Min.		10 Min.		20 Min.		5 Min.		10 Min.		20 Min.		5 Min.		10 Min.		20 Min.		5 Min.		10 Min.		20 Min.		30 Min.		60 Min.	
	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D	S	D
Mercurochrome, 2% aqueous	2+	1+											1+															
	1+	3+	1+	2+	1+	3+																						
	1+	1+	1+	1+	1+	1+	1+	2+	2+	1+	1+	2+	1+	6	1+	1	1+	100	1+	6	3+	50	—	3	3+	40	2+	200
	3+	3+	85	3+	1+	1+													1+	31	1+	2	1+	13	340	100		
	4+	1+	4+	4+	1+	4+																						
Mercurochrome, 2% alcohol-acetone-aqueous	8	1+																										
	1+	3+	1+	4+	1+	85																						
	1+	1+	1+	20	25	14	2+	1+	62	28	2+	2+	1+	2+	1+	9	1+	20	1+	3	1+	—	—	—	225	15		
	2	—	1+	—	10	3																			3+	22	2+	12
	2+	4+	4+	4+	8	4+																						
Alcohol-acetone-water control	4+	80																	4+	1+								
	3+	1+	2+	1+	3+	1+													3+	2+								
Mercurochrome, 5% alcoholic	1+	2+	16	3+	2	4+																						
	1+	—	1+	2			1+	1+	1+	1+	1+	2+	1+	36	1+	10	1+	20	1+	1+	1+	13	1+	10	214	2+		
	1+	1+	1+	1+	1+	1+													1+	2+	1+	60	1+	13	2+	100	3+	5
Iodine, 3.5% alcoholic	1	—																										
	—	1	—	—	—	15	1+	—	—	—	1+	—	—	—	—	—	—	—	—	—	—	1	1+	—	25	15		
	—	17	3	4	—	8													1+	1	1+	—	—	3	250	15	250	5
Tincture of iodine, U. S. P.	—	—	—	—																								
	—	—	—	—	—	—																						
	—	7	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	3		
	—	—	—	—	—	—													—	—	—	—	—	—	1	7	15	—
	—	—	—	—	—	—																						
Control, untreated	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	4+	1+	10			1+	100	4+	4+			4+	4+	4+	100	3+	3+

* Numerals indicate actual numbers of the test organism obtained in culture; 1+ represents 100 to 500 colonies; 2+, 500 to 1,000; 3+, 1,000 to 5,000; 4+, more than 5,000 colonies; S indicates surface, D, deep.

TABLE 4.—*Disinfectant Action of Mercurochrome and Iodine on Mouse Skin Contaminated with Bacillus Anthracis (Spores)*

	Mouse	Treated With	Results	Comment
Experiment 1: Two hours after painting the skin with "disinfectant" solutions, a small portion of skin was cut from the center of area, turned over and enclosed in the wound by sutures	1	Mercurochrome, 2% alcohol-acetone	Died sixth day	B. anthracis in heart's blood
	2	Untreated control	Died fifth day	B. anthracis in heart's blood
	3	Tincture of iodine	No infection	Well after sixtieth day
	4	Tincture of iodine	No infection	Well after sixtieth day
Experiment 2: Conditions same as in experiment 1.....	1	Mercurochrome, 2% alcohol-acetone	Died fifth day	B. anthracis in heart's blood
	2	Untreated control	Died fourth day	B. anthracis in heart's blood
	3	Tincture of iodine	No infection	Well after sixtieth day
Experiment 3: Conditions same as in experiment 1, except that time of exposure before incision was reduced to 10 minutes	1	Untreated control	Died fourth day	B. anthracis in heart's blood
	2	Tincture of iodine	No infection	Well after sixtieth day

DISINFECTANT ACTION OF MERCUROCHROME AND IODINE SOLUTIONS ON SKIN CONTAMINATED WITH BACILLUS ANTHRACIS SPORES

The shaven abdominal skin of each of a series of white mice was contaminated with 10 day old broth cultures of *B. anthracis* containing many spores. When dry the contaminated skin of each mouse was painted liberally with one of the antiseptic solutions. In each test, at the end of the selected time, a small piece of skin from the center of this area was excised, inverted and inserted in the wound, which was closed over it by means of horsehair sutures. The animals were then observed for signs of local or general anthrax infection, and cultures made from the local lesions and heart's blood of the animals that died. Untreated control animals were inoculated in a similar manner in each experiment.

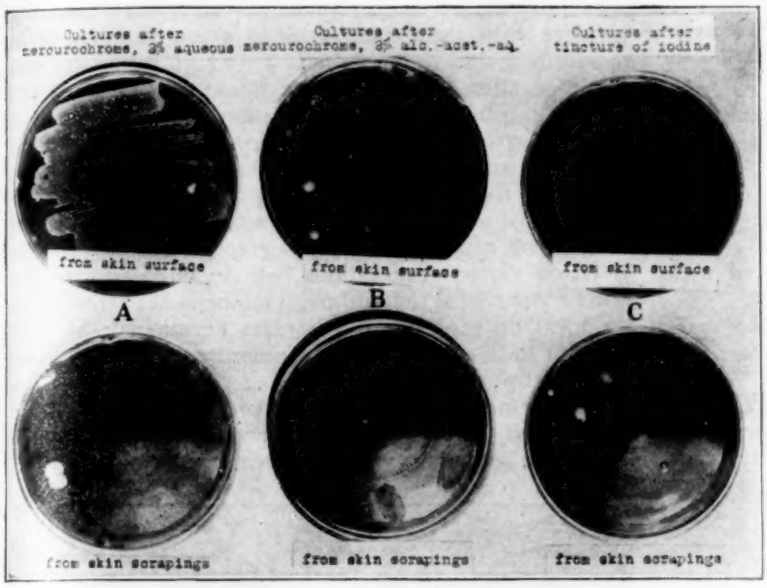

Fig. 2.—Skin disinfection: Surface and deep cultures from rabbit skin previously contaminated with Staphylococcus aureus, made ten minutes after the skin had been painted with different antiseptic solutions.

As shown in table 4, 2 per cent alcohol-acetone-aqueous mercurochrome failed in two hours to kill or to lower the virulence of anthrax spores on the skin. In spite of the application of this solution, the mice died of anthrax and *B. anthracis* was recovered from the site of inoculation and from the heart's blood in each test. Tincture of iodine used in a similar manner on four mice protected them against infection with anthrax. None of these iodine-treated animals showed any evidence of infection. All remained well and alive for at least eight weeks.

SUMMARY

1. The bactericidal efficiency in vitro of the three mercurochrome solutions was not as great as that of the 3.5 per cent iodine solution and decidedly less than that of tincture of iodine.

2. Iodine gauze placed on the inoculated surface of nutrient or blood agar cultures of the test organisms resulted in larger areas of growth inhibition than did mercurochrome gauze.

3. In the disinfection experiments on normal rabbit skin, mercurochrome solutions had less bactericidal action on *Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, E. coli* and *Cl. welchii* than did iodine solutions. Mercurochrome, 2 per cent aqueous (the commercial preparation labeled general antiseptic, in place of iodine) failed to kill *Staphylococcus aureus, Streptococcus pyogenes, Streptococcus scarlatinae, E. coli* and *Cl. welchii* either on or in the skin in fifty-five of fifty-six tests; mercurochrome, 2 per cent alcohol-acetone-aqueous, caused some reduction in the number of organisms but failed to disinfect the skin in forty-five of fifty tests; and mercurochrome, 5 per cent alcoholic, caused a similar reduction in bacterial numbers, but failed in forty-five of forty-six tests.

Iodine, 3.5 per cent, in similar experiments killed the various test organisms on and in the skin in twenty-two of forty-two tests, and in the other twenty tests it resulted in a reduction in the numbers of viable organisms. The U. S. P. tincture of iodine was even more effective. It failed to kill the test organisms in only seven tests—twice with *Staphylococcus aureus* and in five tests with *Cl. welchii* spores—and in these seven tests the numbers of viable organisms was markedly reduced. Tincture of iodine was effectively bactericidal in fifty-one of the fifty-eight tests.

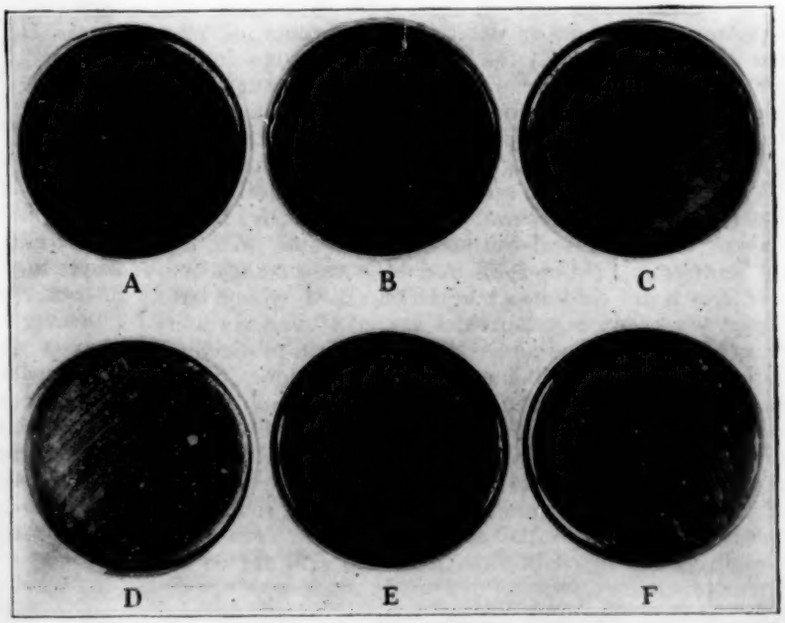

Fig. 3.—Skin disinfection: Surface cultures from shaven rabbit skin previously contaminated with Clostridium welchii spores, made sixty minutes after applications of various mercurochrome and iodine solutions. Culture *A*, after mercurochrome, 2 per cent aqueous; *B*, after mercurochrome 2 per cent alcohol-acetone-aqueous; *C*, after mercurochrome 5 per cent alcoholic; *D*, control from untreated skin; *E*, after iodine 3.5 per cent, and *F*, after tincture of iodine, U. S. P.

4. The 2 per cent alcohol-acetone-aqueous solution of mercurochrome failed to kill or lower the virulence of *B. anthracis* spores on the shaven skin of white mice.

When such skin, treated for two hours with this solution of mercurochrome, was inoculated subcutaneously, the mice died of anthrax in five or six days. Other mice, treated in a similar manner with tincture of iodine, were protected against anthrax infection.

CONCLUSIONS

From the results obtained in this series of experiments, it would appear that the following conclusions are justified:

1. Mercurochrome-220 soluble (2 per cent aqueous) is not effective in disinfection of the unbroken skin.
2. The 2 per cent alcohol-acetone-aqueous solution of mercurochrome and the 5 per cent alcoholic solution of mercurochrome are slightly better than the watery solution but are comparatively feeble bactericidal agents when applied to the unbroken skin, as compared with iodine solution.
3. The 3.5 per cent alcoholic solution of iodine is more actively bactericidal on unbroken skin than any of the mercurochrome solutions tested.
4. From the standpoint of bactericidal action, tincture of iodine (U. S. P.) was found to be far superior to any of these solutions when used on unbroken skin for disinfection purposes.

MERCUROCHROME AND IODINE AS DISINFECTANTS OF MUCOUS MEMBRANE OF MOUTH

PRELIMINARY REPORT ON RELATIVE EFFECTIVENESS *

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The experiments here reported were undertaken with a view of ascertaining the relative efficiency of mercurochrome (especially the 2 per cent aqueous solution) and iodine solutions as disinfectants of the surface of the mucous membranes of the mouth. A further reason has been the general popularity of mercurochrome as a substitute for iodine in preoperative sterilization and for various therapeutic purposes within the oral cavity. Interest in this matter was aroused, indirectly, by the reports of Tinker and Sutton [1] in 1925 and 1926, and of Scott and Hill [2] in 1927, and by a very comprehensive report by Simmons [3] in 1928, all of whom have tested the relative bactericidal action of various mercurochrome solutions and other antiseptics, particularly iodine, from the standpoint of skin disinfection. Tinker and Sutton experimented with a 5 per cent solution of mercurochrome in 50 per cent alcohol, and a 5 per cent alcoholic iodine solution, and concluded that this mercurochrome solution was feebly germicidal against some of the common pathogenic bacteria and that iodine did not have any germicidal action against *Streptococcus hemolyticus* in blood broth. Scott and Hill are of the opinion that the aqueous mercurochrome solutions, in strengths of from 1 to 10 per cent, lack a number of the essential properties of an ideal skin disinfectant and suggest the use of an alcohol-acetone-mercurochrome solution. They assert that with this solution better skin sterilization is obtained than with iodine. Simmons' report is, in certain respects, very much at variance with the experiments of these authors. His conclusions, based on a most thorough study of the whole question involved, are to the effect that although both of the mercurochrome solutions suggested have a decidedly marked germicidal value when compared with mercurochrome-220 soluble (2 per cent aqueous), neither of these preparations has the potency of either the tincture or the 3.5 per cent solution of iodine as a disinfectant of unbroken skin surfaces. His contention, based on varied observations both in vitro and on the skin of animals, is that although iodine is far from being the ideal disinfectant, it possesses germicidal qualities superior to those of any of the mercurochrome solutions so far recommended.

The germicidal action of mercurochrome-220 soluble (2 per cent aqueous) in infections of the oral mucous membrane and the teeth has been claimed by Young, White and Swartz,[4] who took as a basis for their statements the report of Darnall,[5] who tried it out clinically in certain types of gingivitis and root canal infections. However, no comparative bactericidal tests on oral mucosa disinfection were submitted. The fact that mercurochrome-220 soluble is today the disinfectant of choice among a large group of oral surgeons and dental practitioners raises the question whether there is, in fact, a proper justification for the elimination of iodine from this field. Moreover, in the realm of modern nerve-block anesthesia by the intra-oral route this matter is, obviously, of the greatest importance.

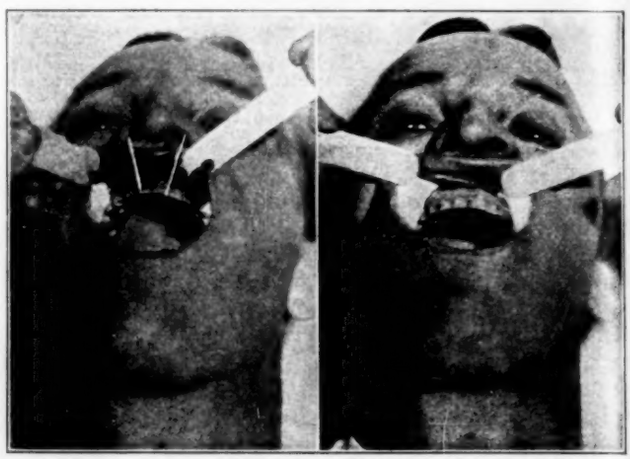

Fig. 1.—At right, sterile rolls in position and patient ready to undergo test; at left, after application of disinfectant, showing trisection of area for one, three and five minute contact periods.

MATERIALS AND METHODS

The antiseptics used in these tests were the following: 1. Mercurochrome-220 soluble (dibromoxymercurifluorescein), a commercial preparation sold generally and labeled "For use as a general antiseptic in place of iodine." This antiseptic is a 2 per cent aqueous solution of mercurochrome and is so designated in the rest of this article. 2. Mercurochrome, 5 per

* From the Dental Section, Department of Preventive Medicine and Clinical Pathology, Army Medical School.

* Published with permission of the Surgeon General, U. S. Army, who is not responsible for any opinion expressed or conclusions reached herein.

* Part of a general study of antiseptics undertaken by the Bacteriological Department, Army Medical School, at the request of the medical supply division of the army. This particular study was done at the suggestion and with the cooperation of Major James S. Simmons, M. C., U. S. Army, in charge of the general investigation.

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cent, in 50 per cent alcohol. 3. Mercurochrome-alcohol-acetone solution. This is prepared by dissolving 2 Gm. of mercurochrome in 35 cc. of water and adding 55 cc. of 95 per cent alcohol and 10 cc. of acetone. 4. Alcohol-acetone solution, which consists of alcohol, 95 per cent, 55 cc.; distilled water, 25 cc.; acetone, 10 cc. 5. Iodine-glycerin, 3.5 per cent, made up of equal parts of tincture of iodine, U. S. P., and chemically pure glycerin. 6. Iodine-glycerin, 1.75 per cent, consisting of iodine solution in the proportion of one fourth of the tincture and three fourths of the chemically pure glycerin. 7. Iodine-glycerin, 0.875 per cent, made up of iodine solution in the proportion of one eighth of the tincture and seven eighths of chemically pure glycerin. 8. Iodine, 3.5 per cent in alcohol.

TECHNIC

Each one of the antiseptic solutions just mentioned was tested directly on the surface of the moist oral mucous membrane of ten different persons, with the exception of antiseptic 8, which was tested six times, and antiseptic 4, which was tested only four times. In other words, the experiments were carried out on a total number of seventy persons.

Each subject was handled as follows: With the head tilted back and resting comfortably on a dental chair (fig. 1), a sterile cotton roll, 1½ inches long, was inserted over the superior bicuspid and anterior molar region of both sides of the upper maxilla. This cotton roll had a twofold purpose; first, it served as a dam against the outflow from Stenson's duct, and, second, it prevented contact of the mucosa and teeth about the angles of the mouth and the possibility of seepage into the area under study. After the patient was secured in this position, a moist sterile swab was brought in contact with the moist mucosa situated in the under side of the upper lip. This location was chosen because of its accessibility and ease of control. The swab thus used was rubbed gently over the surface of a blood-agar plate (nutrient agar p_H 7.6 and 5 per cent horse blood). This plate was designated as the control culture. Immediately following this, the antiseptic solution under study was applied generously over the whole area from bicuspid to bicuspid, the exterior surface of the lower border of the lip, the gingiva and the teeth being included in such painting. The area under test was then considered as consisting of three parts (fig. 1 *A*), namely, left, center and right. After the germicide had been allowed to act for one full minute, a sterile swab, previously dipped in physiologic sodium chloride solution, was rubbed somewhat forcefully against the left mucous area and immediately rubbed onto the surface of a blood agar plate. This culture was designated as the one minute culture. The swab was then inserted into a 250 cc. flask of broth (infusion broth p_H 7.6 plus 1 per cent dextrose). Exactly the same procedure was carried out at the end of three minutes and at the end of five minutes by obtaining the inoculum from the exact center in the case of the three-minute culture and from the extreme right in the case of the five-minute plate culture. The plate cultures were marked accordingly for future identification. As in the case of the one-minute plate culture, each swab was finally inserted into corresponding broth flasks with the idea of determining any possible bacteriostatic action of the antiseptics.

Observations were made at the end of twenty-four and forty-eight hours in the case of the blood agar cultures and as long as seventy-two hours afterward in the case of the flasks serving as bacteriostatic controls.

By means of smears stained by Gram's method, a more or less rough qualitative estimate was made of the inhibition, destruction or preponderance of the bacteria present on all cultures.

TABLE 1.—*Oral Mucosa Disinfection: Comparative Tests*

	Mercurochrome 2% Aqueous				Mercurochrome 5% in Alcohol				Mercurochrome 2% in Alcohol-Acetone			
	Control	1	3	5	Control	1	3	5	Control	1	3	5
1.	++++	+++*	+++*	++++*	++++	++*	++*	+*	++++	++*	++*	+*
2.	++++	+++*	+++*	++*	++++	+++*	0	0	++++	+*	+*	+*
3.	++++	+++*	++*	++*	++++	0	+*	0	++++	+*	0	0
4.	++++	+++*	+++*	+++*	++++	++*	+*	+*	++++	++*	++*	+*
5.	++++	+++*	+++*	++*	++++	+*	0	+*	++++	++*	+*	0
6.	++++	+++*	+++*	+++*	++++	0	+*	0	++++	++*	+*	+*
7.	++++	+++*	+++*	+++*	++++	+*	0	0	++++	++*	+*	0
8.	++++	++*	++*	++*	++++	++*	+*	+*	++++	+*	+*	0
9.	++++	+++*	+++*	+++*	++++	+*	+*	+*	++++	++*	+*	++*
10.	++++	+++*	+++*	+++*	++++	+*	+*	+*	++++	++*	+*	+*
	Iodine-Glycerin 3.5%				Iodine-Glycerin 1.75%				Iodine-Alcohol 3.5%			
	Control	1	3	5	Control	1	3	5	Control	1	3	5
1.	++++	0	0	0	++++	0	0	0	++++	0	0	0
2.	++++	0	0	0	++++	0*	0	0	++++	0	0	0
3.	++++	0*	0	0	++++	0	0	0	++++	0	0	0
4.	++++	0	0	0	++++	0	0	0	++++	0	0	0
5.	++++	0	0	0	++++	0*	0	0	++++	0	0	0
6.	++++	0	0	0	++++	0	0	0	++++	0	0	0
7.	++++	0	0	0	++++	0	0	0	++++	0	0	0
8.	++++	0	0	0	++++	0	0	0	++++	0	0	0
9.	++++	0	0	0	++++	0*	0	0	++++	0	0*	0*
10.	++++	0	0	0	++++	0*	0	0	++++	0	0	0

* Asterisks indicate bacterial growth in the bacteriostatic controls.

RESULTS

Table 1 indicates the comparative results obtained after twenty-four and forty-eight hours' observation of the blood-agar cultures. Bacterial growth is recorded by the usual arbitrary (+) plus signs. Taking the number of colonies on the control plate culture, that is, before treatment of the patient with the antiseptic in question, as a four (++++) plus bacterial growth, the reduction in the number of bacterial colonies due to the germicidal action of the solution used was designated as three, two or one plus, as the case might be, on a rough percentage basis. One (+) plus indicates bacterial growth of anywhere from one to fifty colonies.

Mercurochrome 2 Per Cent Aqueous.—The observations recorded after the application of this solution to the oral mucosa disclosed a lack of germicidal action in all the cultures taken from the ten persons in whom this group of tests was made (fig. 2). There was, however,

a decided drop in the number of colonies after three and five minutes' action of the antiseptic on the oral mucous membrane, as compared with the control cultures. This drop in colony count averaged 25 per cent of the total of tests in this particular group, although as much as a 50 per cent reduction was recorded in three cases. From a qualitative bactericidal standpoint, this mercurochrome solution had a marked germicidal action against the gram-negative cocci of the oral flora, slight action against the gram-positive bacilli and practically no action against the gram-positive cocci, particularly the nonhemolytic streptococci. In fact, *Streptococcus viridans* grew luxuriantly in all the cultures from the persons treated with this solution. In a total of ten control cultures and thirty test cultures taken from a group of ten persons, sterility was not secured in any instance of attempted oral mucous membrane disinfection by the use of a 2 per cent aqueous mercurochrome solution. Each one of the bacteriostatic control cultures (flasks of broth) showed bacterial growth at the end of seventy-two hours' incubation.

Five Per Cent Mercurochrome Solution in 50 Per Cent Alcohol.—This antiseptic showed greater disinfecting action on the mucous membrane of the mouth than the 2 per cent aqueous solution. The data obtained from the one-minute and the three-minute cultures on blood-agar were so lacking in uniformity of bactericidal action as to preclude the formation of definite conclusions as to its power of antisepsis in short periods of time. However, the majority of the one-minute and the three-minute cultures showed a reduction of colonies of 75+ per cent and sterility in only five of the cultures of these time periods; namely, two in the one-minute series and three in the three-minute series. The total number of sterile cultures at the end of the five-minute periods was four. In only two instances (cases 2 and 7) was uniformity of germicidal action observed.

The action of this solution against the gram-positive cocci was moderate but more effective than the plain 2 per cent aqueous solution. It showed marked bactericidal action against the gram-negative cocci and the gram-positive bacilli. In two cases gram-negative bacilli were observed in the control blood agar cultures and complete inhibition of the same organism in the corresponding test cultures.

To summarize, in a group of ten persons this antiseptic, used as an oral mucosa disinfectant, caused sterility in four cases, after five-minute intervals, and failed to effect disinfection in six cases.

Two Per Cent Mercurochrome in Alcohol-Acetone.—This solution, as an oral mucous membrane disinfectant, had a sterilizing effectiveness somewhat comparable to that of the 5 per cent mercurochrome alcoholic solution already mentioned. It showed feebler antisepsis in the one-minute and the three-minute periods, but the same number of failures in the five-minute cultures.

The selective bactericidal action was practically the same as that of the 5 per cent alcoholic preparation. It destroyed the gram-positive cocci (*Staphylococcus albus*) and was more active than the aqueous solution against the nonhemolytic streptococci. It prevented the growth of the gram-negative cocci and bacilli in seven cases.

This antiseptic, however, failed to act as an effective mucous membrane disinfectant in four persons out of a group of ten after intervals of five minutes of direct action. The total number of tests, including all time periods, was thirty, of which twenty-five tests failed to produce sterility. The broth flasks showed growth or sterility in uniformity with the results observed in the blood agar cultures.

Iodine-Glycerin 3.5 Per Cent.—This iodine solution produced complete antisepsis in each one of the thirty blood agar test cultures (fig. 2). This group of cultures was obtained from ten persons, in whom the antiseptic was tested, as in the other instances, for periods of one, three and five minutes' contact with the oral mucosa in each case. In one case (patient 3), bacterial growth was observed in one of the broth cultures acting as bacteriostatic controls, namely, the one-minute interval. However, in view of the absolute germicidal action exhibited by this iodine solution in all the blood agar cultures, and of the fact that this apparent impotence of the antiseptic occurred in only one of the one-minute intervals in a total of thirty tests, it would be unwise to interpret just what really occurred in this instance.

Fig. 2.—Mucous membrane disinfection: *A*, mercurochrome 2 per cent-alcohol-acetone; *B*, mercurochrome 2 per cent aqueous; *C*, iodine 3.5 per cent.

In brief, the 3.5 iodine-glycerin solution used in this experiment caused complete disinfection of the surface of the oral mucous membrane in a total of thirty tests on blood agar plates after one, three and five minute periods of contact of the antiseptic with the oral mucosa. It failed to produce sterility in only one of the thirty control broth cultures, namely, a one-minute culture.

Iodine 3.5 Per Cent in Alcohol.—This solution acted potently in the surface disinfection of the oral mucous membrane. Sterility was secured in every one of the thirty tests comprising the one, three and five minute periods on blood agar cultures. As in the previous case, the bacteriostatic control flasks of broth showed bacterial growth in two instances out of a total of thirty cultures. This happened in the three-minute and the five-minute broth control cultures in case 9. The bacterial growth therein obtained was more or less typical of the normal mouth flora.

Iodine-Glycerin 1.75 Per Cent.—As in the preceding experiment, a total of thirty tests was carried out on ten persons, each person being subjected to three swabbings at intervals of one, three and five minutes. No bacterial growth occurred on any of the blood agar cultures at the end of forty-eight hours' observation. The bacteriostatic control cultures in broth showed growth in four of the one-minute broth flasks (cases 2, 5, 9 and 10). However, the twenty-six remaining flasks which comprised all the five-minute and the three-minute controls, and also the remaining one-minute tests, remained sterile. It may be concluded, then, that iodine in this strength is a very potent germicide of the surface mucous membrane of the mouth.

TABLE 2.—*Comparative Disinfectant Qualities of Iodine-Glycerin and Alcohol-Acetone Solutions*

	Iodine-Glycerin 0.875%				Alcohol-Acetone			
	Control	1	3	5	Control	1	3	5
1.	++++	++	+	+	++++	++	+	+
2.	++++	+	0	0	++++	+	+	+
3.	++++	++	+	+	++++	+++	+	+
4.	++++	0	+	0	++++	++	++	0
5.	++++	++	+	+				
6.	++++	++	+	+				

Further light on this question of surface sterilization of the oral mucous membrane was sought by testing an alcohol-acetone solution and a further dilution of iodine in ten other persons. The result of these two tests is shown in table 2.

Iodine at this extremely low dilution begins to lose its potency as a germicide of the oral mucosa, as may be observed from the table. Of the eighteen tests performed at the various time intervals, only four resulted in sterility. There occurred, however, a very marked reduction of colonies in all the cultures.

The alcohol-acetone preparation formed a very irritating solution, causing marked discomfort in every person on whom it was tested. The causation of deep excoriations of the mucosa rendered any further testing impossible. The data obtained demonstrated, in a way, that its action as a germicide was very feeble.

COMMENT

The seventy persons subjected to these experiments were handled and treated under exactly the conditions that obtain in actual practice. The experiment was based on a study of swabs from the normal, unbroken mucous membrane of the mouth before and after the application of the antiseptics in question, for certain definite periods of time, namely, from one to five minutes. No tests were undertaken after five minutes' time, because of the belief that a period longer than this is considered impracticable for routine disinfection under average conditions. The study represents a total of seventy control cultures and 210 actual test cultures on blood agar and a corresponding number of bacteriostatic control cultures by means of flasks of medium, each containing 250 cc. of broth.

Such a bacteriostatic check-up was considered essential because of the unavoidable transfer of large amounts of the antiseptic onto the surface of the blood agar cultures by each swabbing. Therefore, in order not to confuse a transient bacterial inhibition (caused by an intimate contact of large portions of the antiseptic with the inoculum) with actual germicidal action, dilution of the contents of the swab with the generous amount of fluid culture contained in these flasks made such conclusions impossible.

Tincture of iodine, U. S. P., is seldom, if ever, used at the present time for purposes of oral mucous membrane disinfection. In such strength it acts as a powerful irritant and in susceptible persons may produce local effects of a serious nature. The 3.5 per cent alcoholic solution, although possessing an effective bactericidal action, is not easily tolerated by the oral mucosa, a certain amount of discomfort and a more or less transient irritation following its use. The combination of iodine with glycerin, that is, glycerin being used as the diluent of the standard tincture instead of alcohol, results in a preparation easily tolerated and devoid of any irritating effects. In fact, under the name of iodoglycerol a solution like this has been used for many years in dental practice. Moreover, the hygroscopic action of glycerin and its probable rôle in affecting surface tension doubtless contribute to render the iodine element of the solution more effective as a germicide. This is possibly what occurred in the 1.75 per cent iodine-glycerin series of tests in which, in spite of a large reduction of the iodine content, effective surface antisepsis was observed. It is probable, in view of the results obtained by the use of a dilution as low as 0.875 per cent of iodine, that the 1.75 per cent dilution is the lowest limit at which this drug may be used, safely, in disinfection of the oral mucosa.

Even in the low dilutions (3.5 and 1.75 per cent), iodine exhibited a moderate irritating action in these tissues. The use of glycerin as a diluent renders this undesirable effect practically nil. Nevertheless, a few of the persons tested exhibited a marked susceptibility to irritation, even with these low dilutions.

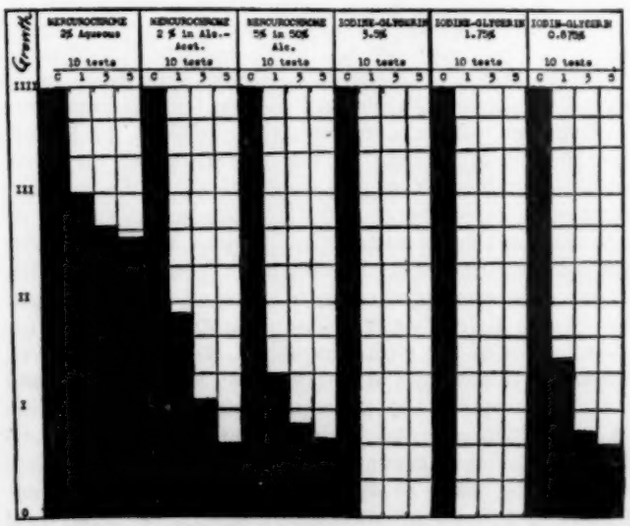

Fig. 3.—Relative bactericidal action of the solutions used.

The outstanding and important question involved in these tests is that, of all the antiseptic solutions compared in this experiment, iodine solutions are the most effective germicide in the presence of the organic elements constantly present on the surface of the mucous membrane of the mouth. Particles of food, mucus, saliva and cellular débris are known to affect greatly the action of disinfectants of the mouth.

A final analysis of these tests shows that mercurochrome-220 soluble (2 per cent aqueous) possesses a very feeble antiseptic action on the surface disinfection of the oral mucous membrane; in fact,

sterility was not secured in any of the three time periods at which it was tested. The 5 per cent mercurochrome solution in alcohol and the mercurochrome-alcohol-acetone preparation possess a decided advantage over the aqueous solution. However, from the standpoint of disinfection of the oral mucous membrane, the germicidal actions of these two suggested improvements of mercurochrome, in skin disinfection, lags far behind the apparent antiseptic effectiveness of the tincture of iodine solutions employed.

CONCLUSIONS

1. Mercurochrome-220 soluble (2 per cent aqueous solution) is too feeble an antiseptic to be used safely as a surface disinfectant of the oral mucous membranes.

2. The 5 per cent mercurochrome solution in alcohol and the mercurochrome-alcohol-acetone preparations possess decided advantages over the aqueous solution, but fail in too large a proportion of cases to be considered effective in surface disinfection of the oral mucous membrane.

3. Iodine in dilutions of 3.5 per cent, and even in 1.75 per cent strength, preferably in glycerin, is an effective germicide from the standpoint of surface disinfection of the oral mucous membranes.

MERCUROCHROME-220 SOLUBLE AND U. S. P. TINCTURE OF IODINE

COMPARISON OF GERMICIDAL EFFICIENCY IN SKIN DISINFECTION

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Since mercurochrome-220 soluble was first introduced by Young, White and Swartz [1] it has come into widespread use in a variety of conditions, and there are numerous reports in the literature on the good results obtained from the application of the aqueous solution. Later, Scott and Hill [2] suggested the use of an aqueous-alcohol-acetone solution of mercurochrome for preoperative skin disinfection. They showed that 2 per cent mercurochrome in aqueous-alcohol-acetone solution is at least as effective as tincture of iodine for disinfection of the unbroken skin. Because of the well known disadvantages of tincture of iodine when used for this purpose, the aqueous-alcohol-acetone solution of mercurochrome has been recommended as a substitute for iodine in preparation of the field of operation.

Since the work of Scott and Hill, aqueous-alcohol-acetone solutions of mercurochrome have been used clinically with complete success for preoperative skin disinfection in place of tincture of iodine. It has been found that the mercurochrome solution can be applied evenly and that there is no marked concentration of the drug at the periphery of the treated area as occurs when iodine is used, that there is no blistering or irritation following its use, and that the mercurochrome penetrates more deeply than tincture of iodine under the same conditions.

In view of the successful clinical use of this solution, it was deemed desirable that further laboratory studies on animals should be carried out under exaggerated conditions, in order to determine the margin of safety that is enjoyed in clinical practice. The present work was undertaken to determine the efficiency of mercurochrome in aqueous-alcohol-acetone solution as compared with tincture of iodine when very large numbers of organisms were applied to the skin surface.

METHOD

It has been found that the average number of bacteria present on the uncleansed human skin is approximately twenty per square centimeter.[3] The greatest number found was sixty per square centimeter, but such a high count was rarely seen. In order to produce exaggerated conditions for test purposes, it was decided to multiply the average count per square centimeter by 50 and to apply to the shaven skin of the laboratory animal sufficient culture of a pathogenic micro-organism to give approximately 1,000 per square centimeter of skin surface. Since *Staphylococcus aureus* is one of the most resistant of the nonsporing pathogens and is the most common cause of suppuration and stitch abscesses, it was selected as the test organism. The strain used was *Staphylococcus aureus* 209, which is being employed by the United States Bureau of Chemistry, Washington, D. C., in regulatory work on disinfectants and antiseptics. This is a standardized culture and complies exactly with the specifications outlined by the Bureau of Chemistry for the normal resistance of this organism.[4] *Staphylococcus aureus* was grown in plain nutrient broth [5] and was transferred every twenty-four hours, and after three consecutive transfers was shown to be of normal resistance by testing against phenol as control. This broth culture was then diluted so that 1 cc. contained approximately 50,000 organisms. This diluted culture was used as the inoculum.

The technic employed in these tests is a modification of that used by Scott and Hill.[2] The rabbit was the laboratory animal used. The abdominal skin was shaved closely, washed thoroughly with warm water to remove any soap that might remain from the shaving, and allowed to dry. The operations were carried out with ordinary aseptic technic, but no special precautions were taken against contamination. When the skin was quite dry, the culture of *Staphylococcus aureus* was applied by means of a sterile cotton swab over the entire shaven surface of the abdominal skin. The culture was allowed to dry and the rabbit was then removed from the table and placed in a cage. No dressing of any kind was used in these experiments, this being unnecessary since contaminants were present in insignificant numbers. In forty-seven of the experiments the culture was allowed to remain on the skin for twenty-four hours before treatment with antiseptics, while in five tests only two hours elapsed before treatment. At the end of these time periods the treated area was marked off into equal squares and the antiseptics to be tested were applied to the center portion of each square, an untreated area of about 0.5 cm. in width being left around each treated portion. There was thus no overlapping of drugs. The antiseptics were applied with sterile cotton swabs in a manner

1. Young, H. H.; White, E. C., and Swartz, E. O.: A New Germicide for Use in the Genito-Urinary Tract: Mercurochrome-220, J. A. M. A. **73**: 1483 (Nov. 15) 1919.
2. Scott, W. W., and Hill, Justina H.: Presentation of a Preoperative Skin Disinfectant, an Alcohol-Acetone-Aqueous Solution of Mercurochrome, J. Urol. **14**: 135-152 (Aug.) 1925.
3. Hill and Scott: Personal communication to the authors.
4. Reddish, G. F.: The Resistance to Phenol of Staphylococcus Aureus, Am. J. Pub. Health **15**: 534-538 (June) 1925; Examination of Disinfectants, ibid. **17**: 320-329 (April) 1927.
5. Reddish (footnote 4, first reference).

simulating the common practice in preoperative preparation. Each drug was applied in exactly the same way and in as nearly as possible the same amount. In each experiment one square area was treated with sterile water and used as a control. After the antiseptics and water (control) had remained on the infected surface for five minutes, the excess was removed from the skin with a moist sterile swab, the control square receiving the same treatment. Approximately 1 sq. cm. in the center of each square was then scraped with a sterile scalpel until capillary bleeding occurred and all the scrapings were removed in 1 cc.

TABLE 1.—*Results of Five Minutes' Exposure to Drug; Culture Remained on Skin Twenty-Four Hours**

Number of Rabbit	2% Mercurochrome in Aqueous-Alcohol-Acetone Solution	Tincture of Iodine	2% Mercurochrome in Aqueous Solution	Water Control	Aqueous-Alcohol-Acetone Control	85% Alcohol Control
1	0	0	++	++++	.....	..
2	3	0	2	++++	.....	..
3	2	0	6	++++	.....	..
4	0	2	1	++++	.....	..
5	1	0	7	++++	.....	..
6	0	0	50	++++	.....	..
7	0	0	0	++++	.....	..
8	1	0	2	++++	.....	..
9	2	0	27	++++	.....	..
10	0	0	++	++++	.....	..
11	2	3	20	++++	.....	..
12	1	1	21	++++	.....	..
13	0	1	....	++++	.....	..
14	1	0	++	++++	.....	..
15	0	0	++	++++	.....	..
16	1	0	++	++++	.....	..
17	1	0	....	++++	.....	..
18	2	1	50	++++	.....	..
19	0	0	++	++++	.....	..
20	0	1	....	++++	+++	..
21	0	0	....	++++	+++	..
22	0	1	....	++++	+++	..
23	4	1	....	++++	+++	..
24	1	0	....	++++	+++	..
25	0	0	....	++++	++	..
26	1	0	....	++++	+++	..
27	0	1	....	++++	+	..
28	0	0	....	++++	++	..
29	0	0	....	++++	+++	..
30	0	0	....	++++	++	..
31	2	6	....	++++	.....	..
32	0	0	....	++++	.....	..
33	0	0	....	++++	.....	..
34	0	0	....	++++	.....	..
35	0	0	....	++++	.....	..
36†	0	1	....	++++	.....	6
37†	1	0	....	++++	.....	15
38†	2	5	....	++++	.....	6
39†	0	4	....	++++	.....	11
40†	6	0	....	++++	.....	17
41	2	3	....	++++	.....	8
42	1	0	....	++++	.....	9
43	0	0	....	++++	.....	11
44	0	3	....	++++	.....	25

* The numerals show the number of test organisms that survived exposure to the antiseptics; ++++ means "too crowded to count," ++ means about half as many as in the control, and so on.
† Culture remained on the skin only two hours.

of sterile water in a petri dish. About 15 cc. of cooled melted agar was then poured into the plate, in the usual manner. The plates after cooling were incubated at 37 C. for forty-eight hours. When growth occurred, it usually appeared within twenty-four hours. In order to be certain that there was no bacteriostatic effect resulting from the amount of antiseptic carried over to the plate, a small portion of the plate was streaked with a fresh broth culture of *Staphylococcus aureus* after the first twenty-four hours. When the forty-eight hour counts were made, these streaks always showed normal growth. This is sufficient evidence that there was not enough of the antiseptic carried over into the plate to inhibit growth of the test organism. This is a very important control measure and is the only way of proving that the medium, after being inoculated with skin scrapings, will permit the organisms to grow normally.

The primary object of this work was to make a comparative study of the effectiveness of tincture of iodine and mercurochrome solutions in disinfecting exaggerated inoculations of the skin with a pathogenic micro-organism. In forty-four of these experiments the antiseptics were allowed to remain on the infected areas for five minutes before scraping, while in eight instances only two minutes was allowed. The five minute time period was used because this is the usual interval allowed in preoperative preparation. In some of the experiments, control tests on a 2 per cent solution of mercurochrome in water and the aqueous-alcohol-acetone mixture without the mercurochrome in the solution used by Scott and Hill were carried out at the same time and in the same way as the tests on the aqueous-alcohol-acetone solution of mercurochrome. In the same way, 85 per cent alcohol was used as a control on the tincture of iodine. The results of these tests are given in tables 1 and 2. In all these experiments the culture was allowed to remain on the skin for twenty-four hours before treatment with antiseptics, with the exception of experiments 36, 37, 38, 39 and 40. In these cases the culture was allowed to remain on the skin only two hours. In table 2 results of experiments are given in which the antiseptics were allowed to act for only two minutes instead of for five minutes.

RESULTS

It is shown in tables 1 and 2 that both 2 per cent mercurochrome in aqueous-alcohol-acetone solution and tincture of iodine are effective skin disinfectants. When sufficient culture of *Staphylococcus aureus* is added that the control shows so many colonies on the plate that they cannot be counted, both these germicides kill all of the organisms or reduce their numbers to an insignificant figure. In twenty-eight of the fifty-two experiments (53.8 per cent), mercurochrome killed all of the test organisms, while tincture of iodine killed all the test organisms in thirty-three of the fifty-two tests (63.4 per cent). In only one instance out of forty-four tests (2.3 per cent) did five or more organisms survive a five minute application of 2 per cent mercurochrome in aqueous-alcohol-acetone solution, and in only two cases (4.6 per cent) did five or more of the test organisms survive application of tincture of iodine for a similar period. When the antiseptics were applied for only two minutes, there were two instances out of eight tests in which five or more organisms survived treatment with mercurochrome, whereas in no case did more than five survive tincture of iodine for the same period. Eight experiments with the two minute period are too few from which to draw conclusions regarding the relative merits of the two antiseptics. Adding the figures in the first and second columns of table 1, it is noted that in the forty-four experiments a total of only thirty-seven of the test organisms survived treatment with mercurochrome for five minutes and a total of only thirty-four organisms survived tincture of iodine for the same period. This is an average of less than one surviving organism for each test.

It is of much significance that these two germicides kill such large numbers of such a resistant pathogen

as *Staphylococcus aureus*. The control plates were too crowded to count accurately, but it was estimated that about 1,000 colonies were present in most cases. In a few the count was lower, but always it was many times greater than the maximum number found on the unwashed human skin. There is no doubt as to the efficiency of these two germicides in disinfecting the skin, not only on the surface but also in the minute interstitial spaces.

It may also be noted, as is shown in column 3 of table 1, that 2 per cent mercurochrome in aqueous

TABLE 2.—*Results of Two Minutes' Exposure to Drug; Culture Remained on Skin Twenty-Four Hours*

No. of Rabbit	2% Mercurochrome in Aqueous-Alcohol-Acetone Solution	Tincture of Iodine	Water Control	Aqueous-Alcohol-Acetone Control
45	1	1	++++	++
46	6	1	++++	+++
47	0	3	++++	++
48	1	0	++++	++
49	6	0	++++	++
50	0	0	++++	+++
51	2	1	++++	++
52	0	0	++++	++

solution is not so completely effective as a skin disinfectant as the aqueous-alcohol-acetone solution. Although the numbers of test organisms are reduced materially (in some cases to below ten), the aqueous solution is nevertheless not to be recommended for disinfection of the unbroken skin. The reason for this will be discussed later.

In column five of table 1 and column four of table 2 it is shown that the aqueous-alcohol-acetone mixture without mercurochrome is of practically no value as a skin disinfectant. In only one instance out of nineteen tests was the number of test organisms reduced materially; in the other eighteen tests the number surviving was only slightly less than that shown in the water control. This clearly shows that the mercurochrome is responsible for the positive germicidal action shown in column one of tables 1 and 2.

As a control on tincture of iodine, 85 per cent alcohol was used in nine experiments. The plate counts obtained are shown in column six of table 1. It is evident that 85 per cent alcohol alone reduced the numbers of test organisms by almost the same amount as did tincture of iodine. Alcohol alone is not sufficiently germicidal, however, to be effective for skin disinfection. A comparison of the count obtained after the use of alcohol with figures in columns one and two will show that it should not be used in place either of mercurochrome in aqueous-alcohol-acetone solution or of tincture of iodine.

Although the number of staphylococci applied to the test areas in the fifty-two experiments just described is many times greater than that normally present on the unwashed skin, even greater numbers were used in two other experiments as a matter of interest. In these two tests, the rabbits were prepared in the manner outlined. An undiluted twenty-four hour broth culture of *Staphylococcus aureus* was then swabbed over the skin heavily and allowed to dry for ten minutes. Two per cent mercurochrome in aqueous-alcohol-acetone solution, tincture of iodine and 2 per cent aqueous solution of mercurochrome were tested, and water, aqueous-alcohol-acetone mixture and 50 per cent alcohol were used as controls. The same technic as that outlined was used except that the time during which the drugs were allowed to remain on the skin was ten minutes instead of five minutes. The control plates were so full of colonies that they presented a dense haze in the agar instead of discrete colonies. Hundreds of thousands of organisms, therefore, were added to each test area. Even under these conditions, both 2 per cent mercurochrome in aqueous-alcohol-acetone solution and tincture of iodine killed almost all the organisms added. As is shown in table 3, only seventeen staphylococci survived treatment with mercurochrome in one test and only five in the other, while only nine survived tincture of iodine in one test, and all were killed in the other. Two per cent aqueous mercurochrome again is shown to be less effective for the disinfection of the unbroken skin. In column 5 of table 3 it is again shown that aqueous-alcohol-acetone solution without mercurochrome reduced the number of organisms only slightly below that obtained from the water control. Fifty per cent alcohol gave about the same results as the aqueous-alcohol-acetone control. It is shown in these tests that mercurochrome in the Scott-Hill solution and tincture of iodine both kill many thousands of organisms on the shaven skin of a rabbit when exposed for ten minutes.

COMMENT

It would seem that tincture of iodine and mercurochrome are the two substances in most general use as skin disinfectants, and in view of the great number of favorable clinical reports on the use of mercurochrome it was considered to be a matter of great interest to make a comparative study, on a quantitative basis, of the effectiveness of the two substances in disinfecting experimental inoculations of the unbroken skin. In view of the importance of this subject it might be well at this point to make a brief survey of the literature.

Solutions of iodine in alcohol have been used for a number of years in preoperative skin disinfection, but there are many statements in the literature that it is not completely effective and that its use is attended by undesirable effects.

TABLE 3.—*Results When Undiluted Broth Culture Was Swabbed on Shaven Skin of Rabbit Abdomen, Allowed to Dry for Ten Minutes, and Exposed to Antiseptics for Ten Minutes* *

Number of Rabbit	2% Mercurochrome in Aqueous-Alcohol-Acetone Solution	Tincture of Iodine	2% Mercurochrome in Aqueous Solution	Water Control	Aqueous-Alcohol-Acetone Control	50% Alcohol Control
53	17	9	1,000	++++	+++	+++
54	5	0	++	++++	+++	+++

* The control plates showed many thousands of colonies, too many to count.

Robb,[6] in a report on iodine sterilization of the skin, comes to the conclusion from the results of his experiments that "sterilization with tincture of iodine is not to be relied upon."

Bonney and Browning[7] found that every trace of iodine color had disappeared from the neighborhood of the wound long before the operation was finished. In some work on iodine sterilization, they conducted the following experiment: The skin of patients was treated

6. Robb, Hunter: Iodine Sterilization of the Skin, Surg. Gynec. Obst. **7**: 324, 1913.

7. Bonney, Victor; and Browning, C. H.: Sterilization of the Skin and Skin Surfaces by a Mixture of Crystal Violet and Brilliant Green, Brit. M. J. **1**: 562 (May 18) 1918.

with a 2 per cent tincture of iodine and allowed to dry. One hour later the same treatment was given and the area then scratched with a sharp needle. The needle was then streaked across a prepared agar plate. Experiments were conducted on ten patients and four scratches were made on each. There was no case of complete sterilization, and 60 per cent of the streaks on the plates showed growth.

Coley and Burke [8] reported that 12.8 per cent of their patients with hernia developed infections following preoperative preparation with tincture of iodine. This figure was based on their experience with 500 patients.

Decker [9] carried out a number of experiments on the use of tincture of iodine in skin disinfection and found that in most cases iodine was not effective. He used a 10 per cent tincture. In the first series of experiments, small pieces of skin which had been painted twice with the tincture were washed in bouillon and cultivated for twenty-four hours at 37 C. Growth was observed in every case. The organisms found were staphylococci, streptococci, diplococci and a leptothrix bacillus. In another series the skin, after being treated twice with 10 per cent tincture of iodine, was scratched with a sharp instrument and tubes of broth were inoculated. Growth of streptococci and staphylococci was observed in most cases. In yet another series, the skin was scraped after treatment and the scrapings plated out in agar. Growth of streptococci and staphylococci was found in the majority of the experiments. Finally, scrapings were taken from the patients immediately before and after operation (the skin in each case had received two applications of the 10 per cent tincture of iodine). In nearly every case both sets of plates were contaminated with streptococci and staphylococci. Decker, therefore, states that tincture of iodine does not show high bactericidal action when applied to the skin surface. He further remarks that its use is undesirable because it is accompanied by severe irritation and leads in most cases to blisters.

In addition to such unfavorable results following the use of iodine there are other considerations which make its use undesirable. As is well known, unless the iodine is removed from the margin of the treated area severe blisters are likely to occur. The excess of iodine is often removed by alcohol, but in doing this iodine is being removed from the field of operation, where its presence is of great importance. It has been pointed out by Bonney and Browning [7] that a number of postoperative infections probably arise because of the disappearance of the antiseptic from the field of operation. Iodine is a very volatile substance and even if the excess is not removed it soon disappears, not, however, before it has blistered the skin.

It has further been observed that mercurochrome penetrates more deeply than iodine,[2] and the work of Mayes [10] and of White [11] clearly demonstrates that it retains its germicidal properties as long as it remains in the field.

It was early shown that solutions of mercurochrome could readily be used on delicate tissues without destruction or irritation. Young, White and Swartz [1] reported that there was no evidence of irritation when a solution of mercurochrome was instilled into the conjunctival sac of rabbits, and that solutions varying from 0.1 to 5 per cent could be used in the genito-urinary tract without harm. They further stated that a 1 per cent solution had been injected into the kidney pelvis by means of a ureteral catheter and retained for five minutes without signs of irritation. They also injected a 1 per cent solution into the bladder and it was retained for six hours without complaint from the patient.

Lancaster, Burnett and Gaus [12] found that solutions of mercurochrome could be used with great advantage in the conjunctival sac of patients without irritation. They further observed that its activity was not greatly reduced by the presence of tears, mucus or pus.

Mayes [13] reported on the excellent results which he had obtained from the use of mercurochrome in obstetrics. He stated that far better results were obtained with mercurochrome than with tincture of iodine. It was found that when the introitus, vulva and surrounding field were painted with tincture of iodine severe blistering of the skin and mucous membranes resulted. He found, however, that no such blistering occurred when mercurochrome was used. After the hips of the patient had been elevated, a drachm of the solution was poured into the vagina and worked carefully into the mucous folds and around the cervix. The solution was also applied to the thighs, buttocks and lower part of the abdomen and it was found that no blistering occurred, that the process was quite painless, and that repeated applications could be made and large amounts of solution used without harm being done. It was found that smears taken from the vagina after preparation with mercurochrome were usually sterile after five minutes and were always sterile when taken somewhat later.

In a later paper [14] it was stated that a reduction of 50 per cent in morbidity from childbirth was achieved when mercurochrome was used as a routine preparation. It was found that vaginal smears were negative from twenty-four to forty-eight hours after the use of the solution.

Mayes [15] reported a reduction of 40 per cent in puerperal morbidity when mercurochrome was used as an external preparation and instilled into the vagina in place of tincture of iodine. Mayes stated that as a result of the use of mercurochrome in routine preparation in obstetric cases in which the hydrostatic bag induction method was used, the morbidity and mortality was greatly reduced. This report was based on an analysis of 171 cases. It was found that the morbidity in cases of toxemia was reduced from 20.5 to 10.3 per cent by spraying the perineum and instilling mercurochrome into the vagina.

Brady [16] used a 20 per cent mercurochrome solution on the vaginal cervix and applied it along the entire endocervix to the internal os. He states that his experience has shown that for the endocervix this drug is absolutely safe in this strength and that there was never any evidence of general toxic symptoms nor any local

8. Coley, B. L., and Burke, Edgar: The Operative Treatment of Hernia by Living Sutures, Am. J. Surg. **2**: 1 (Jan.) 1927.
9. Decker, C.: Experimentelle Beiträge zur Frage der Jodtinkturdesinfektion, Deutsche med. Wchnschr. **37**, number 23, June 8, 1911.
10. Mayes, H. W.: The Use of Mercurochrome in Obstetrics, Am. J. Obst. & Gynec. **10**: 61-69 (July) 1925.
11. White, C. J.: Fungus Diseases of the Skin: Clinical Aspects and Treatment, Arch. Dermat. & Syph. **15**: 387-404 (April) 1927.
12. Lancaster, W. B.; Burnett, F. L., and Gaus, L. H.: Mercurochrome-220: Clinical and Laboratory Reports on Its Use in Ophthalmology, J. A. M. A. **75**: 721 (Sept. 11) 1920.
13. Mayes, H. W.: Morbidity in Obstetrics: Its Reduction by the Use of Mercurochrome as a Vaginal Antiseptic, New York State J. Med. **26**: 384-388 (May 1) 1926.
14. Mayes, H. W.: The Use of Mercurochrome in Preparation for Delivery, Long Island M. J. **21**: 146-148 (March) 1927.
15. Mayes, H. W.: The Use of Mercurochrome as a Vaginal Antiseptic in the Induction of Labor, J. A. M. A. **89**: 1685-1689 (Nov. 12) 1927.
16. Brady, Leo.: Gonorrheal Endocervicitis Treated with Strong Solutions of Mercurochrome, Bull. Johns Hopkins Hosp. **37**: 400-407 (Dec.) 1925.

destruction of tissue. He also found that 20 per cent mercurochrome was followed by less local reaction than that following the application of iodine.

Todd [17] found that "mercurochrome is a powerful antiseptic of low toxicity, rapid and deep penetrability, and causes little irritation."

White [11] used a 2 per cent aqueous solution of mercurochrome in the treatment of epidermophytosis, and states that it is far more effective than any drug that he had employed before.

There are thus many favorable references to the use of aqueous solutions of mercurochrome on delicate tissues and on the skin surface.

In 1925, Scott and Hill [2] suggested the use of an aqueous-alcohol-acetone solution of mercurochrome for preoperative skin disinfection. They found that such a solution was a far more efficient germicide in such work than the aqueous solution. Animal experiments showed that the new solution was slightly better than tincture of iodine in disinfecting against an eighteen hour 1 per cent dextrose broth culture of *Staphylococcus aureus, B. coli* and *Proteus*. Similar experiments were also carried out on the abdominal and scrotal skin of patients. It was pointed out that there was no marked concentration of mercurochrome at the periphery of the treated area as occurs when iodine is used, that there was no blistering or irritation, and that the solution penetrated more deeply than tincture of iodine.

Tinker and Sutton [18] found that a 5 per cent solution of mercurochrome in 50 per cent alcohol was better than tincture of iodine, but reported that such a solution of mercurochrome was not efficient in skin disinfection.

Aqueous solutions of mercurochrome are thus of great value in cases in which the skin is broken and when used on mucous membranes. For general skin disinfection as in preoperative preparation, however, the aqueous-alcohol-acetone solution has proved to be much more effective, and at the same time its use is not attended by such undesirable effects as follow tincture of iodine. The aqueous-alcohol-acetone solution is more effective than the plain aqueous solution in disinfecting the unbroken skin probably because of its lipoid soluble properties. The aqueous-alcohol-acetone mixture dissolves the fatty secretions of the skin and the germicide is thus carried into the minute interstices. This results in more complete disinfection than is possible with an aqueous solution.

SUMMARY AND CONCLUSIONS

Fifty-four experiments were performed under practical laboratory conditions to compare the efficiency of mercurochrome and tincture of iodine in skin disinfection. Exaggerated conditions were produced in the form of excessive numbers of the test organism. A culture of *Staphylococcus aureus* was applied to the shaven skin of the abdomen of the rabbit. After the culture had been allowed to remain on the skin test area for twenty-four hours in forty-four experiments, two hours in eight and ten minutes in two experiments, 2 per cent mercurochrome in aqueous-alcohol-acetone solution, tincture of iodine and 2 per cent aqueous solution of mercurochrome were applied to marked off square areas of the skin and allowed to remain for two and five minute periods and in two cases for ten minutes. At the end of the given time of exposure the excess of each antiseptic was swabbed off with a moist sterile cotton swab. The treated skin was then scraped until capillary bleeding occurred. The skin scrapings from each treated area were plated in agar and incubated for forty-eight hours, and the surviving organisms counted.

The results of these experiments may be thus summarized:

1. Two per cent mercurochrome in aqueous-alcohol-acetone solution and tincture of iodine are equally effective in disinfecting the unbroken skin.

2. When about fifty times the average number of organisms normally present on the human skin are applied to the skin of rabbits, both these antiseptics reduce this number to an average of less than one.

3. In forty-four experiments in which each antiseptic was applied to the infected skin for five minutes, mercurochrome killed all the test organisms (*Staphylococcus aureus*) in 53.8 per cent of the tests, and tincture of iodine killed them all in 63.4 per cent of the tests. In 97.7 per cent of the mercurochrome treated areas, less than five organisms survived, while of those areas treated with tincture of iodine 95.4 per cent gave counts of less than five living organisms.

4. Aqueous solutions of mercurochrome have proved to be efficient clinically in the treatment of wounds and on mucous membranes; 2 per cent aqueous mercurochrome solution is not, however, as efficient in skin disinfection as 2 per cent mercurochrome in aqueous-alcohol-acetone solution, since it has no lipoid soluble properties. The latter solution is, therefore, preferable for preoperative preparation.

5. The aqueous-alcohol-acetone mixture without mercurochrome is a very feeble germicide for skin disinfection.

6. Eighty-five per cent alcohol reduces the number of organisms very considerably, but is not as good as mercurochrome in aqueous-alcohol-acetone solution or as tincture of iodine.

7. The use of both these germicides for five minutes is sufficient for preoperative skin disinfection.

8. Because of the well known objections to tincture of iodine for preoperative skin disinfection, these experiments show that mercurochrome in aqueous-alcohol-acetone solution is far more desirable for this purpose.

901 Roland Avenue—701 Belle Terre Avenue.

17. Todd, A. T.: Experimental and Clinical Investigation of Mercurochrome, Lancet **2**: 1017-1019 (Nov. 14) 1925.

18. Tinker, M. B., and Sutton, H. B.: Inefficiency of Most of the Commonly Used Skin Antiseptics, J. A. M. A. **87**: 1347-1351 (Oct. 23) 1926.

Histology of Carcinoids.—From their structure carcinoids were at first thought to be carcinomata; in fact, they are constituted by columns and masses of epithelia which infiltrate. Their usual benignity and their small size earned for them the name little carcinomata (Lubarsch), then carcinoid (Oberndorfer), under which name they are commonly described. We shall take as a type the carcinoids which form at the tip of the appendix. When the carcinoids are small, the epithelial columns are situated solely in the axial connective tissue of the appendix; in other specimens, while situated in the axial connective tissue, they invade also the interstices of the circular and longitudinal muscle coats and the nerves of Auerbach's plexus without destroying either the contractile fibers or the nerves. In still other more advanced specimens, they occupy the axis of the appendix, the interstices of the muscle and invade the peritoneal fat. It is obvious that their point of departure is always the axis of the appendix and that they infiltrate the muscularis and the serosa later. Their development is centrifugal. Carcinoids consist of epithelial cells grouped in columns of varying breadth and a stroma.—Masson, P.: *Am. J. Path.*, May, 1928.

A PLAN FOR TRAINING COUNTY HEALTH OFFICERS *

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This subject has received much attention in recent years, but the problem still remains a very definite one, both from the standpoint of the organization seeking the right type of man and from the point of view of the graduate in medicine desiring to enter the field of public health. In many states there has been a very rapid increase in the number of county health departments, thus emphasizing the ever-present problem of securing trained health officers. The plan of meeting the situation in Tennessee, though still in the experimental stage, is here presented for whatever value it may have as a contribution to the subject, but more especially to stimulate discussion on the whole problem.

PERSONNEL AND PROGRAM OF COUNTY HEALTH DEPARTMENT

The personnel for the average county of 25,000 population consists of a medical health officer, a public health nurse, a sanitary officer and a clerk, all giving full time to the work of the department. In counties smaller than the average, one or more of the nonmedical workers may be omitted, and in larger counties the organization may be expanded by the employment of additional workers belonging to any of the professional classes mentioned. This organization, inadequate though it may be, is expected to meet the public health needs of the area. Sanitation, control of communicable diseases, including tuberculosis and venereal diseases, maternal and child hygiene, and popular health instruction, comprise activities common to all organized health departments; but in many counties a program is required for industrial hygiene and for such diseases as malaria, hookworm and trachoma, together with other public health problems of local importance.

REQUIREMENTS AND AVAILABILITY OF HEALTH OFFICERS

The program as outlined embraces the most essential health services, and to obtain the desired results with a small personnel a high degree of efficiency must be attained. The public, and particularly the taxpayer, have a fairly definite conception of values and will not continue to support a service which falls short of being both efficient and effective. It becomes incumbent, therefore, on all persons interested in the promotion of the public health movement to use every resource in an endeavor to prepare workers for public health positions who will be capable of supplying service in the most economical and effective manner. The health officer occupies the key position. Properly trained workers in other positions are most essential, but their preparation will be dismissed as beyond the scope of this paper.

The law of Tennessee requires that a health officer be a graduate in medicine. With this provision in the statutes there is little disagreement, at least in medical circles, and it may be dismissed so far as the legal aspects are concerned. The demands of a modern health program should dispel such views as that any physician can be a health officer, or health officers are born and not made. The fact remains that a medical course is basic, but in practice it has been found that training as given in the medical schools at the present time does not fit the graduate for an administrative health position. Most courses in hygiene are approached from the laboratory or academic point of view, and in only a few medical schools is an attempt made to relate the subject matter to practical field problems. This situation is being remedied gradually, but we can hardly hope that a course shaped to produce practitioners of medicine will also produce finished health officers. The man who has practiced a few years may add to his equipment the art of human contact, but this experience gives him little opportunity to acquire a knowledge of public health problems and public health administration. It may also be stated parenthetically that his store of fundamental scientific information is apt to be in inverse ratio to the period of time elapsing since his graduation, and that, lacking such information, he will be handicapped very much in his new field. In the future, medical schools may in a measure solve the problem, as some are now doing, by teaching public health in a more practical way and by affording more opportunities for special training through elective courses. We may also hopefully look forward to the day when schools of public health will supply the need to a greater extent. For the present and the immediate future, however, health officers must be recruited mainly from graduates in medicine who are not especially trained in public health work.

The organization over which the health officer will have charge will be small and his activities will be varied. He must be a general practitioner in the field of public health and consequently he cannot be a specialist in any one branch. His success will depend, to a degree, on his ability to plan work for subordinates and to supervise their activities, but to a greater extent it will hinge on his ability to organize and utilize the resources of the community. In order to do this he must not only have organizing ability but must also have a reasonable knowledge of public health measures and methods. A health officer should be well grounded in communicable disease diagnosis and control; he should know the principles of sanitation; he should be reasonably well acquainted with methods for promoting hygiene of mother and child; he should know something of simple statistical methods, and he should be acquainted with educational methods and the social sciences. State health departments have attempted to supply these deficiencies through close supervision of local programs and policies and by making available to local health officers consultant services in the several specialties. This plan has helped to fill the gap, and, while there will always be a need for such service, no amount of supervision or consultation will ever take the place of initiative on the part of the local health officers.

ADAPTATION OF NEEDS TO RESOURCES

Granted that a man has a reasonable knowledge of medicine and has the inherent qualities of leadership, how can he acquire the necessary training in public health? There are two ways: by experience alone, or by training plus experience. The road of experience is long and hard, alike to the student whose path will be beset with difficulties and to the public who will suffer from his mistakes. Training plus experience is the best method and the point at issue is, How can it be acquired? The time and expense involved are very important considerations. Requiring a medical graduate to take a year or more of special training to

* Read before the Section on Preventive and Industrial Medicine and Public Health at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

become a county health officer imposes a hardship from the economic point of view. The future presents promise; medical schools are slowly but gradually extending their courses in hygiene and commencing to relate such courses to practical problems; and greater use is being made of schools of public health. A suitable course in the curriculum of medical schools will shorten the period required for supplemental training of medical graduates, and the schools of hygiene are turning out a small number of highly trained men; but neither meets the present need in preparing men for positions as county health officers.

At this time we are faced with a situation quite comparable with that confronting the nation when it entered the World War. There was a definite demand and a citizenship willing to serve. We could not produce a sufficient number of officers by a prolonged period of training at West Point or Annapolis, nor could the men serve a period of enlistment. The emergency was met by the eduational institutions of the country throwing open their doors and, by concentration of effort together with some reshaping of course, supplying instruction in subjects such as applied mathematics, physics, chemistry and mechanics. Training camps were established and there both officers and men were taught the art of warfare. The training was deficient in many respects, yet practically all will agree that the fighting force, as well as the nation back of it, was quite efficient and very effective. The situation in the field of public health is not far different. There is a demand for health officers with a working knowledge of public health; we cannot wait for them to acquire this knowledge either by experience or by prolonged training; educational institutions are capable of giving instruction in fundamentals, and the health organizations can supply the field training. Public school authorities have met this situation by offering such courses for teachers in their respective states. Medical schools are also offering opportunity for graduates in medicine in other phases of medical service by offering short courses in medicine, surgery, pediatrics and the specialties. Such a plan was discussed at the conference on the future of public health and the training of sanitarians, held under the auspices of the United States Public Health Service in March, 1922, and these principles are being followed essentially in Tennessee.

SURVEY OF RESOURCES

Before looking elsewhere for the solution of its problem, the Tennessee State Department of Public Health made a survey of local resources with the object of fulfilling the following requirements: an educational institution under whose auspices the course might be given; teaching personnel equipped by reason of training and experience, and health organizations in a position to supply the necessary field training and experience, all easily accessible and sufficiently concentrated to make possible close supervision and proper administrative control. In and around Nashville such a combination was found. Vanderbilt University is in position to give intramural instruction in all essential branches. The medical school ranks with the best in the country. Its department of preventive medicine is well organized on a full-time basis and has for several years been teaching public health to medical students from the objective point of view. The state department of public health has a well manned central organization and cooperates technically and financially in county health service. Approximately one third of the rural population of the state is under whole-time health protection. Four of these counties are conveniently situated for training purposes. Nashville is located in Davidson County, which has a large county health department serving a population largely suburban. Two of the adjacent counties are typically rural, each with a small health organization consisting of a medical health officer, a public health nurse, a sanitary officer and a clerk. The fourth county has a combined city-county health department serving the city of Murfreesboro and Rutherford County. In this county the Child Health Demonstration Committee of the Commonwealth Fund is conducting an intensive child health service in addition to the usual activities of a county health department. Nashville, through its city departments, hospitals and private health agencies, is able to supply facilities for training in city health administration. For the past several years these agencies have been cooperating in the teaching of medical students and, therefore, it was not difficult to provide a schedule which would afford opportunity for training graduates in medicine who desire to follow public health as a career.

GENERAL PLAN AND PURPOSE OF COURSE

The course is conducted under the auspices of the department of preventive medicine of the Vanderbilt University School of Medicine in cooperation with the Tennessee State Department of Public Health. In the catalogue of Vanderbilt University School of Medicine it is classed as a short course in public health for graduates in medicine. The same policy of opening the facilities of the medical school to medical graduates for short courses of instruction is followed by other departments. No certificate is issued, but a written statement is given indicating that the course has been taken. The teaching force is drawn from Vanderbilt University School of Medicine, the Tennessee State Department of Public Health and the local health departments participating in the field work. Special lecturers are supplied by other agencies. With these groups from which to draw, subjects can be assigned to instructors especially qualified in each particular branch.

As previously stated, the primary purpose is to fit graduates in medicine for positions as county health officers. No attempt is made to encompass the field of public health or develop specialists in any branch. The course is merely intended to be an introduction to the subject which should give the physician a working knowledge of public health. Three main objectives, however, are recognized: (1) To acquaint the medical graduate with the field of public health, its possibilities, its problems and the method of approach; (2) to inform him of the resources of his community, state and nation, on which he might draw, and (3) to develop the point of view of a health officer. While primary consideration is given to administration, the course affords an opportunity to review fundamentals. During this period, instructors are able to estimate a man's potentialities as a county health officer.

The course occupies a total of twelve weeks, divided into two periods of six weeks each. The first period is quite similar to the usual short course in public health, consisting of round-table discussions, laboratory exercises, clinical instructions and personally conducted field trips. The second period is actually spent in a local health department, where to all intents and purposes the student becomes an assistant to an experienced health officer. No more than two or three students are assigned to any county at one time, thus insuring individual attention on the part of the health officer.

DETAIL OF SCHEDULE

The subjects are classed as majors and minors: The majors are administration, maternal and child hygiene, communicable diseases, laboratory and sanitation; and the minors, medical zoology, vital statistics, industrial hygiene, mental hygiene, graphic methods and rehabilitation of the handicapped. In actual practice there is a merging of subjects, but the time allotted to each is approximately as given in the accompanying table.

Time Spent on Major and Minor Subjects

Subject	Hours
Administration, general	92
Survey of town	38
Communicable disease control	66
Epidemiology	18
Maternal and child hygiene	114
Public health laboratory	18
Sanitation	84
Medical zoology	12
Vital statistics	18
Industrial hygiene	12
Mental hygiene	12
Graphic methods	12
Rehabilitation of handicapped	6

The following examples will serve to illustrate the manner of handling the subjects:

Administration.—Throughout the course this subject is stressed and the various administrative aspects of each activity are discussed. Particular attention is given to community organization, program planning, finances, and methods by which the several services are delivered. The Tennessee Manual for the Conduct of County Health Departments is used as a guide. During the field assignment, practical experience in the actual conduct of a county health department is obtained.

Communicable Diseases.—The public health aspect of these diseases is discussed in round-table conference, and special emphasis is placed on the state regulations governing communicable diseases. The course in epidemiology consists of a series of laboratory exercises on methods used in tracing the source of an epidemic and control methods to be instituted. When in the counties, the student receives the reports of communicable diseases, conducts his investigations and institutes the control procedure.

Sanitation.—Field visits are made to water and sewage treatment plants; to various establishments preparing or dispensing food, including meat and milk, and to swimming pools and other establishments subject to sanitary control. Such places are inspected and scored by the student, and while assigned to county work he takes an active part in the program of sanitation.

Public Health Laboratory.—Six afternoons are spent in the diagnostic laboratory of the Tennessee State Department of Public Health. Instruction is given in the use of the laboratory and the interpretation of reports. Practical training is given in certain simple laboratory procedures which the health officer may be called on to perform.

Medical Zoology.—The subject is developed from the point of view of parasitic diseases, with special stress being placed on prevention. The parasites involved are also studied, and the student is given an opportunity to become acquainted with simple diagnostic methods.

SUMMARY

Most county health officers are recruited from among recent graduates in medicine and practicing physicians. They should be given systematic instruction which will prepare them for their new field. There is a need for short courses which will provide this instruction. Training is essentially a function of educational institutions, but local health organizations must cooperate by providing the necessary field experience. Such a program has been developed by the department of preventive medicine of Vanderbilt University School of Medicine and the Tennessee State Department of Public Health.

Memorial Building.

ABSTRACT OF DISCUSSION

DR. C. N. LEACH, New York: I am very much interested in the question of the practical training of health officers and have been asked by Dr. Welch to tell what is being done along this line in Alabama. The Rockefeller Foundation, in cooperation with the state board of health, established a training station in Alabama in 1922, built around a county unit, and training only prospective health officers. That station has greatly increased its scope of activities and is now offering training to nurses, inspectors and physicians destined for county health positions. The training in Alabama has been entirely devoted to practical field work with an average period of about four to six weeks. The evolution of this training program has been very interesting to me. At one time, newly appointed health officers for Tennessee were trained at the Alabama station. Tennessee is now training her own men, the program having been somewhat broadened to include more of the didactic side. This, I think, is a step in the right direction. As is well known, our medical schools give very little time to the preventive side of medicine. Vanderbilt University has taken the lead in this respect. Using the facilities of the Vanderbilt University School of Medicine, the state department of health has worked out a well rounded program of training for these health workers. There is only one danger in that system; that is the possibility of overemphasizing the didactic side, thereby giving the flavor of a postgraduate course. One advantage in the system of training as it is carried out in Alabama is that the nurse, inspector and health officer are trained in a group as a health unit. They learn team work as well as obtain a knowledge of each other's duties and responsibilities.

DR. MATTHIAS NICOLL, JR., Albany, N. Y.: Not long ago I had the pleasure of visiting Vanderbilt University, and found the course there admirably conducted. In addition to training health officers, the university is rendering a service regarding which there is much talk of late years but very little action; namely, the training of undergraduates in the fundamental principles of preventive medicine. The head of the department of preventive medicine sits in at all clinical discussions with the heads of other departments for the purpose of bringing out the methods and procedures which might have been adopted to prevent or delay the clinical condition under observation. I do not know whether this procedure is carried out elsewhere, but if so, it has not come to my knowledge. It is certainly an example which should be followed by all medical schools.

DR. CHARLES LAUGHINGHOUSE, Raleigh, N. C.: Last year I spent a little while with the Tennessee Health Department, at which time I was given the opportunity, through the courtesy of Dr. Bishop and Dr. Mountin, of observing Dr. Mountin's plan for training health officers. Dr. Mountin is peculiarly fortunate because of a contact with the medical department of Vanderbilt University through Dr. W. S. Leathers. Contact with a chair of preventive medicine is something to be attained, if possible; nevertheless, such contact is not absolutely essential to Dr. Mountin's plan. The health officers whom Dr. Mountin had in training at the time of my observation came so close to the various bureaus of the Board of Health of Tennessee that they got a broader vision of their possibilities and became interested more deeply in health work as a whole, and it was easily seen that they were being more or less amalgamated into the Tennessee health machine. North Carolina has thirty-eight county health departments operating on a plan of local self-government. The plan of organization and the plan of work is decided on by the county board of health. The county board of health hires and discharges the county health officer and all other personnel of the county health department,

and decides on the salary of the entire personnel. The state board of health cooperates with and assists through the state director of county health work. The county health departments are graded by a cost equivalent system. I believe that this plan in a thickly populated, wealthy county is not a bad one, but in rural counties, sparsely populated, with a high tax rate, the system described has not, to my mind, proved satisfactory. There are some counties which have as health officers men who have had no preparation in the specialty of preventive medicine, while there are other counties employing men as health officers as an evidence of appreciation for past political favors. The county health officer is obligated to treat the inmates of the county home, the prisoners in the jail and convict camps, and other indigent sick directed to him by the county welfare officer. This type of medical practice, being as a matter of course filled with emergencies, hinders and handicaps the health officer when he comes to execute a systematic scheme for health work. If Dr. Mountin could incorporate in his plan the idea that health officers should prevent disease, and that physicians in private practice should treat disease, and have it endorsed by the county authorities, I believe that the plan, as practical as it is, would come to be of more emphatic and more immediate use.

DR. JOSEPH W. MOUNTIN, Nashville, Tenn.: There is one point that I wish to emphasize in connection with the plan; it is not a school of public health but rather an attempt to train health officers. And while the situation in Tennessee is well adapted to such a program, yet I believe that the same principles might be applied in other states; that is, coordinating the existing facilities of some medical school with those of state and county health departments so that didactic work can be combined with field work and training put on a basis of definite instructions, rather than simply letting the students cruise around among the county health departments and pick up what they may.

APLASTIC ANEMIA*

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Aplastic anemia is a disease which is rarely observed by the general practitioner. As a type of anemia, however, it is relatively common and very important. It is often overlooked or misdiagnosed because of its varied and striking manifestations, which frequently mask completely the primary illness and cause it to be classed with other diseases, such as the infections or the hemorrhagic diseases.

Aplastic anemia, as described originally by Ehrlich, is caused primarily by aplasia of the bone marrow. As a sequence, the rate of blood generation is reduced and anemia inevitably follows.

Aplastic anemia has been produced experimentally in animals through the agency of benzene poisoning [1] and by irradiation of animals.[2] Aplasia of the marrow in the wing bones of pigeons follows simple starvation, according to Bizzozero and Torre, Doan [3] and Sabin,[4] and marrow necrosis can be produced with diphtheria toxin (not antitoxin [5]). The experiments of Doan are of particular interest since by simple starvation he produced "simplification" or atrophy of the marrow to such an extent that nothing was left in the marrow cavities except blood vessels, stroma cells and fat. Starvation does not necessarily cause anemia in human beings.[6]

In each of the widely differing experiments quoted, rapid regeneration of the bone marrow follows withdrawal of the toxicant, benzene or x-ray, or follows the feeding of the starved pigeons on a full mixed cereal diet. A tendency in the direction of reduced blood generation may be observed occasionally in persons who have "intestinal parasites, metallic poisoning, neoplasms, endocrine disturbances, pregnancy, chronic gastro-intestinal disease, toxemia as a result of kidney disease or liver cirrhosis, acute or chronic infections, or defective diet." [7] I observed a case of chronic aplastic anemia which seemed analogous to Doan's experimental condition in an adult whose stomach, because of a developmental abnormality, was scarcely larger than that of a 12 year old child. He had never been able to tolerate normal quantities of food and at the time I saw him had been living on a deficient diet for many years. The administration of a concentrated diet rich in liver and vitamins gave rise to very rapid recovery—in fact, changed him from an almost moribund patient with a classic blood picture of aplastic anemia to one in good health, within a period of about two months.

The symptoms displayed by a patient with aplastic anemia depend on which of the formed elements of the blood are most markedly reduced. If red cell reduction dominates the situation, anemia is the prominent symptom. If the thrombocytic element is the most markedly involved, the prominent symptoms are hemorrhage or purpura hemorrhagica. If the granulocytic elements are chiefly involved, the prominent symptom is likely to be infection.

The foregoing statements apply to the cases in which aplasia of the marrow is the sole factor of importance. In some cases, however, another element is important; namely, destruction of the blood in circulation. Apparently, in many instances, the agent that injures the marrow also tends to destroy the formed elements in the blood itself. When this is the case, symptoms of blood destruction may be added to those previously mentioned so that there may be in addition poikilocytosis, fever, accumulation or excretion of derivatives of blood pigment and enlargement of the liver or spleen. This may give rise to a red cell picture resembling that of pernicious anemia rather than that of a secondary anemia. The whole symptom complex differs strikingly, however, from that of typical pernicious anemia in the absence of such symptoms as stomatitis, atrophy of the papillae of the tongue, and other tissues, neuropathies, marked increase in the color index of the red cells, macrocytosis and achylia. There is, therefore, depending on the factors a reduced rate of blood formation and an increased rate of blood destruction, two rather distinct types of aplastic anemia, in one of which reduced blood formation is the dominant feature, and in the other of which blood destruction is an added factor making the red cell picture resemble somewhat that of pernicious anemia.

There is a third type of so-called aplastic anemia which occasionally occurs as a terminal event in the course of pernicious anemia. The blood picture resembles aplastic anemia in its scarcity of red cells, granulocytes and platelets, but differs in showing at autopsy a megaloblastic marrow instead of a fatty marrow. There is also a fourth type which has been very

* Read before the Section on Practice of Medicine at the Seventy-Ninth Annual Session of the American Medical Association, Minneapolis, June 14, 1928.

1. Selling, L.: A Preliminary Report of Some Cases of Purpura Hemorrhagica due to Benzol Poisoning, Bull. Johns Hopkins Hosp. **21**: 33, 1910; Benzol als Leukotoxin, Beitr. z. path. Anat. u. z. allg. Path. **51**: 576, 1911.

2. Heinecke: Untersuchung über der einwirkung der Roentgenstrahlungen auf der Knockenmark nebst einigen Bemerkungen über die Roentgentherapie der Leukämie, Deutscher Ztschr. f. Chir. **78**: 196, 1905.

3. Doan, C. A.: Bull. Johns Hopkins Hosp. **33**: 22, 1922.

4. Sabin, Florence R.: Bone Marrow, Physiol. Rev. **8**: 191, 1928.

5. Duke, W. W.: Causes of Variation in the Platelet Count, Arch. Int. Med. **11**: 100 (Jan.) 1913; Variation in the Platelet Count, J. A. M. A. **65**: 1600 (Nov. 6) 1915.

6. Ash, J. E.: The Blood in Inanition, Arch. Int. Med. **14**: 8 (July) 1914.

7. Minot, G. R.: Aplastic Anemia, in Oxford Medicine **2**, Part II.

well named myelophthisic anemia, in which the usual bone marrow elements are thought to be crowded out by foreign cells such as by the lymphocytes in chronic lymphotic leukemia, by the granulocytes in splenomyelogenous leukemia, or by tumors of the marrow, either primary or metastatic, or by osteosclerosis. The remarkable condition, especially that caused by lymphocytic leukemia, may give rise to a blood picture which is identical to that caused by primary atrophy of the bone marrow; in fact, it may not be possible to differentiate clinically between the two types of cases. This is common in the case of chronic aleukemic lymphocytic leukemia, in which frequently a positive diagnosis of the real condition rests solely on the finding of lymphomas in the skin. It would be perfectly proper to call cases of this sort aplastic anemia with lymphocytic leukemia as the etiologic factor. However, the term myelophthisic anemia serves well to identify the aplastic anemias of this class.

There are, therefore, several classes of illness which give rise to the blood picture of aplastic anemia. There are fewer classes which give rise to the true bone marrow picture of the disease.

Aplastic anemia has several etiologic factors, some known and some unknown. The term "idiopathic" is used to identify a type which is relatively common and not well understood at the present time. In this illness, "idiopathic aplastic anemia," the symptoms develop without apparent cause and progress steadily until its fatal termination after a period of a few weeks or a few months.

The clinical course of each type of aplastic anemia varies greatly depending on the acuteness of the condition and on which element—red cell, white cell, or platelet—is most profoundly reduced.

In the acute case, the symptoms may be stormy and proceed to a rapidly fatal issue. If anemia is the dominant feature, the illness may resemble an actively progressive anemia of the secondary type. If the platelets are reduced to almost a point of absence, hemorrhagic diathesis is added to the picture. If the platelet count falls between 20,000 and 60,000, bruises and a tendency to bleed from trivial abrasions may be the only hemorrhagic symptoms.[8] If, however, the number of platelets is reduced below this point, especially if reduced almost to a point of absence, purpura hemorrhagica in high grade makes its appearance and gives rise to profuse hemorrhages from the nose, gums, gastro-intestinal tract, urinary tract, and trivial abrasions, and to purpura in the form of bruises at the site of slight injuries and spontaneous petechiae. Further than this, the patient may display constitutional symptoms attributable to the effect of multiple small hemorrhages into internal organs, especially into active muscular organs such as the heart and the gastro-intestinal tract. With this symptom complex goes the finding of a normal coagulation time, a firm but nonretractile blood clot, and a prolongation in the bleeding time. The symptoms may be so severe as to terminate fatally within a few days.

If a reduction in the number of granulocytes dominates the picture, rapidly spreading infection (a granulocytic angina) may be the prominent feature of the disease. Mouth infections too trivial to attract the attention of either patient or physician may suddenly spread, especially if traumatized, and may cause, within a period of from twenty-four to forty-eight hours, extensive necrosis in the mouth or throat and may be followed by signs of general infection, which may terminate fatally within a period of days or even hours. Smears taken from the necrotic areas, in cases of this sort, may be nearly free of both leukocytes and bacteria. I observed one such patient in whose blood I could not find one solitary polymorphonuclear leukocyte and very few in scrapings from superficial infections. The patient died of uncontrollable infection.

In the more chronic cases, the course of the disease is quite different from the foregoing in that nothing of serious moment may seem to effect the patient except for symptoms attributable to a slowly progressive anemia. At any time, however, during the course of a chronic case, the picture may change suddenly from that of a chronic mild disease to that of an apparently acute fulminating disease. This change may occur coincident with a lowering of the number of blood platelets nearly to a point of absence or with the disappearance of the leukocytes and the development of infection. The onset of the symptom infection, or purpura hemorrhagica, may be so acute and stormy as to mask completely the symptoms of the primary illness, anemia; and in case the patient consults a physician for the first time at this point, the primary source of the illness may be overlooked entirely. In fact, the physician may not become acquainted with the fact that the patient has been the subject of a chronic disease. He may be led rather to believe that he is suffernig from an acute fulminating disease of short duration. This startling turn in events in reality may be due solely to a slight increase in the primary symptoms of the disease, aplastic anemia; that is to a slightly increased lowering in the number of blood platelets or to the traumatizing of a trivial infection. This may prove unfortunate for the physician if he has just instituted a new form of treatment which the patient or family may blame for the new state of affairs.

Aplastic anemia is an illness that must always be taken seriously. The gravity of the condition depends naturally on the primary cause of the disorder and on the degree of reduction in the formed elements of the blood. For this reason the prognosis varies. In highly aplastic cases of unknown origin and in the myelophthisic cases, the outlook is extremely bad. The illness is almost certain to terminate fatally within a period of a few days, weeks or months. If the primary cause of the aplasia is known and can be removed, there is a good chance for recovery. One would believe from the experimental work with benzene poisoning and starvation aplasia that complete regeneration of the marrow with restoration of a normal blood picture should almost invariably occur if the primary cause of the aplasia of the marrow is completely removed. The bone marrow is not like an organ with a complicated architecture, such as is found in the liver or kidney, but is architectually simple and can regenerate rapidly and readily even after its almost complete destruction, if it is rid of the primary cause of its destruction.

Treatment should be directed primarily toward removal of the cause of the aplasia if the cause can be found and if it can be removed. Diet is of less service in this type of anemia than in pernicious anemia unless definite dietary deficiency is found to be the true cause of the disorder. Transfusion is very useful for the purpose of restoring either red cells or platelets. If adequately given, it relieves the symptom of anemia

8. Duke, W. W.: The Relation of Blood Platelets to Hemorrhagic Disease, J. A. M. A. **55**: 1185 (Oct. 1) 1910; Bull. Johns Hopkins Hosp. **23**: 144, 1912; Arch. Int. Med. **10**: 445, 1912; footnote 7.

or of purpura hemorrhagica. In the case of purpura hemorrhagica it may be necessary to repeat transfusion at intervals of from three to five days because of the natural short life of the blood platelets.[9] The onset of infection is a serious complication and is likely to terminate fatally if once started. Because of the high grade loss of resistance to infection, the traumatizing of small infections should be carefully avoided. If pyorrhea is found, for example, it should be treated with mild medication rather than by instrumentation, and tonsils if infected should be treated medically or left alone. Surgery should by all means be postponed. Furthermore, the traumatization of membranes such as the nasal or uterine mucous membranes by packing to control hemorrhage may have a disastrous sequence in the form of hemorrhage or of local followed by general infection, or of all combined.

SUMMARY

Aplastic anemia as a cause of illness is relatively rare. As a cause of anemia, however, it is relatively common. The symptoms depend on the primary cause of the illness and on the element red cell, leukocyte or platelet which is most profoundly reduced in number. For this reason, the prominent symptoms may be those of anemia, infection or purpura hemorrhagica. Indications for treatment depend on the cause of the illness, its acuteness, and on which of the formed elements of the blood are most markedly reduced.

Federal Reserve Bank Building.

ABSTRACT OF DISCUSSION

DR. OTIS S. WARR, Memphis, Tenn.: Dr. Duke has used the term "aplastic anemia" to apply to all those conditions characterized by reduced activity of bone marrow. He has called attention to a variety of conditions in which such aplasia may sometimes be observed. To this list I would suggest two other possible causes, syphilis and chronic malaria, both of which may be observed in almost any clinic in which there is a large percentage of negroes. I would also emphasize the importance of dietary deficiency as a cause. Such a case, caused by prolonged feeding of milk alone, was seen recently. The anemia cleared up promptly when this patient was placed on a normal, well balanced diet. While there are a variety of conditions known to cause a reduction in bone marrow activity, there remains a group for which a definite cause has not been assigned. Since in the latter group the only known pathologic change is a complete aplasia of the bone marrow, we might refer to these cases as primary aplastic anemia and designate those whose etiology is known as secondary aplastic anemia. Dr. Duke pointed out that the clinical picture depends in large measure on which of the formed elements are most profoundly affected. When the blood platelets are greatly reduced, purpuric manifestations will be encountered. In this event, acute aplastic anemia may be easily confused with acute essential thrombocytopenia. In the latter condition, splenectomy offers a chance of cure in the majority of cases, whereas in aplastic anemia it would only hasten the fatal termination. The differential diagnosis must depend primarily on a careful study of the reticulocytes and other evidences of bone marrow activity. At times, in the rapidly fatal cases of acute aplastic anemia, the reduction in red cells and hemoglobin may not keep pace with that of the platelets and leukocytes. Hence the anemia may not be marked. Such a case was seen recently. Within five days from the onset of symptoms, the platelets were reduced from 40,000 to zero and the leukocytes from 5,000 to 900, all of which were lymphocytes. During the same period the red cells were reduced less than a million, and at the time of death numbered nearly four million. We must be extremely cautious in dealing with chronic focal infection. Even so simple a procedure as the extraction of a tooth may, when there is a great reduction in the granulocytes, start up a rapidly fatal general infection. Any kind of surgery in such cases is extremely hazardous.

DR. RAPHAEL ISAACS, Ann Arbor, Mich.: In a condition in which the number of leukocytes is decreased, it is necessary to determine from the point of view of treatment and prognosis whether the leukocytes are decreased because they are not being made in the bone marrow, or whether they are decreased in number because they are lost very rapidly. A very simple test may be used to distinguish these two conditions. Normally the leukocytes which are made in the bone marrow are lost through the mucous membranes of the gastro-intestinal tract, especially the mucous membrane of the mouth. Therefore, if one asks a patient to clear his mouth, then allow the saliva to collect, and with a pipet collect some of the saliva and put it in a blood counting chamber, the number of leukocytes can be counted easily. In a normal person, one will find under such conditions from 5 to 150 leukocytes per cubic millimeter. If the leukocytes are not being made in the bone marrow, they will not be lost in the saliva, and therefore one will find very few or no leukocytes in the saliva. If the leukocytes are being made in the bone marrow and being lost rapidly, one will find very many, running up to thousands per cubic millimeter. This will help to distinguish the type in which no leukocytes are being made and in which treatment is hopeless, and the type in which leukocytes are being made but which are lost rapidly.

DR. W. W. DUKE, Kansas City, Mo.: I was interested in what Dr. Warr said about dietary deficiency. If aplastic anemia is due to dietary deficiency, we have another means of treating a perfectly dreadful disease. I do not know of any disease much worse than aplastic anemia.

9. Duke, W. W.: The Rate of Regeneration of Blood Platelets, J. Exper. Med. **14**, 1911.

THE INTRAMUSCULAR INJECTION OF DEXTROSE *

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CHICAGO

The value of the parenteral administration of dextrose, when the condition of the patient precludes its administration otherwise, is quite generally appreciated. It is employed to advantage in practically every condition in which a patient is unable to take food in the normal manner. This includes comatose states; toxemias; local gastric disease and other conditions accompanied by nausea and vomiting; infections, such as pneumonia and typhoid, in which dextrose by mouth is avoided because of its tendency to favor tympanites; local intestinal conditions, as many diarrheas, which may be aggravated if carbohydrate is given orally, and other conditions too numerous to mention in a brief review. Dextrose is of value to the body not only because it is a readily convertible source of energy but also because it is necessary for the proper catabolism of fat, which, next to glycogen, is the principal source of energy for the body. The latter fact is the basis for the highly beneficial results of dextrose therapy in acidosis resulting from starvation, most commonly, in children, secondary to persistent nausea and vomiting. Acidosis under such circumstances is due to acid bodies resulting from the incomplete oxidation of the body's fat secondary to depletion of the glycogen reserve and failure of replacement of this reserve from food taken by mouth.

The difficulties of the parenteral administration of dextrose are most marked in infancy and childhood and are familiar to every pediatrician. Rectal administration is unsatisfactory, the intravenous route is fre-

* From the Leon Klein Fund, the Nelson Morris Institute for Medical Research and the Sarah Morris Hospital for Children, of the Michael Reese Hospital.

quently impossible, and intrasinus infusion requires a degree of skill and apparatus not always readily available. The intraperitoneal administration of dextrose, according to the method of Sanford and Heitmeyer,[1] promises to be of great value in pediatric therapeusis. This relatively simple method has, however, definite limitations. It is contraindicated in preoperative and postoperative abdominal conditions, and many other pathologic states of the abdominal cavity and its contents, particularly the tympanites of pneumonia.

There is another method of administering dextrose parenterally that appears to have attracted but little attention, and that is the method of intramuscular injection of dextrose solution. I first became interested in this procedure in the winter of 1927, while resident in pediatrics at the Sarah Morris Hospital. Dr. Isaac A. Abt, who had been called in consultation on an infant critically ill with pneumonia, suggested the intramuscular administration of dextrose solution on the basis of favorable reports on this form of therapy from the clinic of Nassau[2] in Berlin. The patient was given dextrose according to Nassau's technic but died the following morning, which was not unexpected in view of his desperate condition. However, the possibilities of the intramuscular injection of dextrose solution were so impressive that it was decided to subject the procedure to further investigation.

Nassau was interested primarily in the treatment of pneumonia, and considered dextrose a very valuable cardiac aid in this condition. By raising the blood sugar level a more ready supply of dextrose, and therefore of glycogen, is available for the laboring heart. The induced hyperglycemia causes fluid to pass from the tissues into the blood, tending to relieve pulmonary congestion. The blood pressure also is said to be raised, although this was an inconstant observation in my series. Diminished tone of the skeletal muscles, which may occur in pneumonia and is an unfavorable prognostic sign, is benefited by dextrose therapy, according to Nassau, who also states that favorable results from the intramuscular injection of dextrose were reported by Marfan in progressive muscular atrophy, and by Hamburger in myotonia congenita.

Stamm,[3] following Nassau's report, treated twelve infants with bronchopneumonia and cardiac failure by the intramuscular injection of dextrose. Of these infants six died, and of these six one case each was complicated by syphilis, empyema and whooping cough. Another of the six, an infant, aged 9 weeks, received daily injections of about 20 cc. of 15 per cent dextrose solution until a total of 400 cc. had been given. During this treatment, although the physical condition in the lungs changed but little, the general condition of the infant improved and the temperature descended almost to normal for about two weeks. At this time a gas bacillus abscess developed in the muscles of one thigh. After incision and drainage, this was further complicated by erysipelas and the child died. Stamm concludes that while the intramuscular injection of dextrose in the pneumonias of early life is probably useful as an aid in weakness of the cardiac or skeletal muscle, the procedure is not without danger.

Flesch[4] also expressed the opinion that dextrose therapy is of value in the pneumonias of infancy. He preferred the intravenous administration, but when this route was not practical gave the dextrose intramuscularly, usually daily for five or ten days depending on the clinical course of the disease. In one case forty-six injections were given. Flesch states that he did not observe any unfavorable complications as a result of the intramuscular injection of dextrose.

The only unfavorable results reported by Nassau which could be attributed to the use of dextrose were in two cases in which sclerematous changes in the skin occurred after repeated injections. This condition gradually disappeared when the dextrose therapy was discontinued. According to Nassau, similar cutaneous changes were observed by Stejskal following the intravenous injection of dextrose.

In a series of more than a hundred cases, which includes premature infants as well as older children and an occasional adult, the only ill results I have seen from the intramuscular injection of 10 per cent dextrose solution were in three cases in which indurated areas, which persisted for one or two weeks, appeared deep in the muscles. It was suspected that these were hematomas secondary to blood vessel injury, but this could not be verified because the patients survived. In three instances specimens of muscle into which dextrose had been injected, taken from infants who died six, seven and twelve hours, respectively, after the injections, did not show any microscopic pathologic changes when compared with specimens, from the same patients, of muscle that had not been injected with dextrose. The intramuscular injection of dextrose is now in general use at the Sarah Morris Hospital.

The value of any one therapeutic measure, when several different procedures are employed at the same time, and in diseases in which spontaneous recovery may occur regardless of the therapeusis, is very difficult to estimate. At the Municipal Contagious Disease Hospital a series of patients with acute diphtheritic myocarditis were given dextrose intramuscularly because nausea and vomiting precluded oral administration, and the condition of the myocardium contraindicated the more rapid administration of fluids intravenously. It was very hard to evaluate the effect of dextrose in this condition but a number of these patients, all of whom were critically ill, survived. If dextrose proves to be of value as a circulatory support in diphtheria, as is suggested by the experimental work of Edmunds and Cooper,[5] and the clinical report of Toomey,[6] the intramuscular route may provide a very practical way of administration.

In a small series of cases of pneumonia in children, the impression is that dextrose is decidedly beneficial. In one case of cyclic vomiting, the intramuscular administration of dextrose was apparently very useful. Perhaps the intramuscular injections, in addition to providing dextrose, were of value in combating the psychic element which seems to play a part in this condition.

I have used dextrose intramuscularly principally in children who, for one reason or another, were unable to retain fluids taken by mouth. The chief indication has been persistent vomiting and acidosis accompanying

1. Sanford, H. N., and Heitmeyer, P. L.: Intraperitoneal Use of Dextrose in Diseases of Children, J. A. M. A. **90**: 737 (March 10) 1928.
2. Nassau, E.: Die Klinik der Säuglingspneumonie, Ztschr. f. Kinderh. **41**: 413 (July 15) 1926.
3. Stamm, C.: Zur Behandlung der Bronchopneumonie in Säuglingsalter, Monatschr. f. Kinderh. **36**: 345, 1927.
4. Flesch, H.: Zur Behandlung der Säuglingspneumonien, Ztschr. f. Kinderh. **6**: 576 (Nov. 29) 1927.
5. Edmunds, C. W., and Cooper, R. G.: Action of Cardiac Stimulants in Circulatory Failure Due to Diphtheria, J. A. M. A. **85**: 1798 (Dec. 5) 1925.
6. Toomey, J. A.: Clinical Observations with Injections of Dextrose in Diphtheria, Am. J. Dis. Child. **35**: 722 (April) 1928.

acute infections. The results in this type of case have been very good. One case is particularly interesting and will serve as an example:

A child, aged 20 months, living on the outskirts of the city, was seen by a physician, who was called because the boy had been vomiting at frequent intervals during the previous twenty-four hours. He was in moderate stupor, with deep, rapid respirations suggestive of the Kussmaul type. He also had whooping cough and an acute otitis media which were apparently the etiologic factors. Since the parents were unwilling that he be taken to a hospital, intramuscular injections of dextrose were given at home, 40 cc. into each thigh. Pharmaceutic ampules of 50 per cent dextrose were used, the solution being diluted to 10 per cent in the syringe with distilled water, also from ampules. Fifteen minutes after the injection was given the child roused from his stupor, the respirations became slow and regular, and he sank into a normal sleep. This patient subsequently developed an acute mastoiditis from which he made a good recovery, but in the interval before he came to operation he was given four more injections of dextrose, and in two of these blood from the father was mixed with the solution. This last slight modification of technic I believe of value, particularly in very young patients.

TECHNIC

Ten per cent dextrose in distilled water or physiologic solution of sodium chloride (sterilized by autoclaving under 15 pounds pressure for twenty minutes) at body temperature is injected into the muscles of the lateral and anterolateral surfaces of the thighs (the vastus lateralis and intermedius groups of the quadriceps femoris). A syringe of at least 20 cc. capacity and fairly fine needles (20 gage) should be used. The solution usually enters the tissues with great ease, particularly in markedly dehydrated patients, and in those instances in which the needle point happens to lie in a fascial plane. The fluid should not be delivered more rapidly than at the rate of fifteen minutes for 100 cc. The amount of solution that may be given depends on the ease with which the muscles become distended, the injection being stopped or the position of the needle changed as soon as the tissues feel tense. In the case of very small infants, particularly premature infants, care should be exercised to avoid overdistention of the tissues as this has caused compression of the veins in several instances, with temporary embarrassment to the venous return and consequent cyanosis of the extremity. From 20 to 40 cc. may be given into the thigh of an infant, and up to 100 cc. or more into the thigh muscles of older children or adults. Absorption of the dextrose is usually complete within an hour. In inserting the needles care should be taken to avoid the femoral artery, which lies in a line joining the middle of the inguinal ligament with the internal condyle of the femur. This line may be conveniently marked out with mercurochrome. The solution is best given only intramuscularly, though in some instances in which a moderate amount of dextrose was given subcutaneously no ill effects were observed. This is in agreement with Talbot's[7] statement that a 10 per cent solution of chemically pure dextrose may be introduced subcutaneously without injury to the tissues.

The dextrose should be of chemically pure grade, and the solution should probably be made with freshly distilled water free from pyrogen to avoid the toxic effects due to this substance which some distilled waters may possess or acquire on standing, as has been described by Seibert.[8] No temperature reactions were observed in our series, though precautions were not taken to rule out pyrogen. Early in my work I took care to adjust the hydrogen ion concentrations of the dextrose solutions to p_H 7.4, as suggested by the work of Williams and Swett,[9] and Stoddard.[10] However, it was soon discovered that the ordinary stock solutions did not produce any ill effects, even though the hydrogen ion concentration was as low as 5.4 in some cases. Possibly this is because muscle tissue, on account of the nature of the chemical processes involved in its physiologic activity, is able to accommodate itself to relatively great changes in the hydrogen ion concentration toward the acid side. There is some experimental evidence tending to corroborate this supposition.[11] Another reason may be that when dextrose is decomposed by alkali,[12] and probably by overheating, one of the principal acids formed is lactic acid, a substance normally elaborated during muscular activity.

A moderate amount of caramelization of the dextrose does not seem to produce any ill results. Caramelization seems to be due principally to one or two factors: overheating in the sterilization or making up the dextrose in a solution containing alkali, as Ringer's solution, since dextrose is easily decomposed, even by very dilute alkalis. The color of the caramelized dextrose solution, especially in the fainter shades, is somewhat similar to that of potassium dichromate in aqueous solution, and for this reason the icterus index[13] may be employed for an approximate quantitative expression of the degree of caramelization. I have not used dextrose solutions whose icterus index, or, more properly speaking, index of caramelization, was greater than one third, an aqueous solution of 1:10,000 potassium dichromate being considered as having an icterus index, or index of caramelization, of 1.

Nassau states that 15 per cent dextrose may be injected intramuscularly. My experience has been limited chiefly to the 10 per cent solution. Of three patients in whom 20 per cent dextrose was inadvertently injected intramuscularly, in the first no unusual sequelae were observed; in the second there was moderate swelling and edema which persisted for twenty-four hours, and in the third there was considerable edema and tenderness which appeared very shortly after the injection, and for a time the possibility of a deep abscess was considered. The symptoms disappeared gradually, however, in the course of four or five days. In the third case the error was discovered after the muscles of one thigh had been injected. The other thigh was then treated with the 10 per cent solution, which was absorbed without causing an untoward local reaction.

The pain associated with the intramuscular injection of dextrose does not seem any worse than that induced by the intramuscular injection of diphtheria antitoxin. This opinion was expressed by many patients who had been given both.

7. Talbot, F. B.: The Use of Glucose in the Treatment of Diseases of Children, Boston M. & S. J. **192:** 1000 (May 21) 1925.

8. Seibert, F. B.: The Cause of Many Febrile Reactions Following Intravenous Injections, Am. J. Physiol. **71:** 621 (Feb.) 1925.

9. Williams, J. R., and Swett, Madeleine: Hydrogen Ion Concentration Studies, J. A. M. A. **78:** 1024 (April 8) 1922.

10. Stoddard, J. L.: Avoidance of Intravenous Glucose Reactions, Boston M. & S. J. **191:** 1121 (Dec. 11) 1924.

11. Schade, H.; Neukirch, P., and Halpert, A.: Ueber lokale Acidosen des Gewebes und die Methodik ihrer intravitalen Messung, Ztschr. f. d. ges. exper. Med. **24:** 11, 1921. Reiss, P., and Vellinger, E.: Recherches potentiométriques sur le p_H intérieur du muscle, Compt. rend. Soc. de biol. **94:** 1368 (June 4) 1926. Furusawa, K., and Kerridge, P. M. T.: Hydrogen Ion Concentration of the Muscles of the Cat, J. Physiol. **63:** 33 (June 7) 1927.

12. Friedmann, T. E.: On the Determination of Lactic Acid in Sugar Solutions Decomposed by Alkali, J. Biol. Chem. **76:** 75 (Jan.) 1928.

13. Bernheim, A. R.: The Icterus Index (a Quantitative Estimation of Bilirubinemia), J. A. M. A. **82:** 281 (Jan. 26) 1924.

In those instances of infections in premature infants or other infants having a lowered resistance in which blood from the father or other donor was mixed with the dextrose, this was usually in the proportion of one fourth or one fifth of whole uncitrated blood to three fourths or four fifths of dextrose solution. The mixture of blood and dextrose is more rapidly absorbed than whole blood injected intramuscularly but less rapidly than the dextrose when it is given alone.

At this point a word might be said with regard to the advantages of using the thigh muscles for injection instead of the time-honored muscles of the buttocks. Injection of any amount of fluid into the gluteal muscles must necessarily cause pressure, which may be painful, on the ilium, particularly when the patient is in the usual supine position, because these muscles are broad and relatively thin and closely applied to the bone. Moreover, the muscles are closely covered by thick fascia, limiting the amount of fluid which may be given without causing undue distention. In this region, also, unless a real degree of care is taken, certain important structures, as the sciatic nerve or rectum, may be injured, or the pelvis may be entered through the sciatic notch. If the thighs are used according to the preceding directions, these objections are obviated. I became impressed with the superiority of the thighs as a site of injection while resident physician at the Municipal Contagious Disease Hospital. The procedure was instituted as a routine, with reference to diphtheria antitoxin and all other musclar injections, by Dr. Archibald Hoyne, the medical superintendent, a number of years ago. Thousands of intramuscular injections have been given there since and ill results have never been observed which could be attributed to the fact that the thigh muscles were used. Probably every one who has had any considerable experience in using the buttocks for injection has seen at least a few unfortunate accidents.

Contraindications to the intramuscular injection of dextrose may be considered the same as contraindications in general to intramuscular injection. These depend on the local condition of the skin through which the needle is to pass, and the underlying tissues into which the injection is to be made. In the presence of a known hyperglycemia, dextrose injection would be superfluous. It is possible, also, that such injections are contraindicated in the presence of a bacteremia, since, conceivably, localization of the organisms might be favored in edematous tissues having a high dextrose content.

TABLE 1.—*Effect of Intramuscular Injections of Dextrose on Blood Sugar Level* *

Case	Age in Years	Cc. of 10% Dextrose Injected	Blood Sugar Before Injection†	Hours Interval from Start of Injection	Second Blood Sugar	Percentage Increase
1	7	40	86	½	107	24
2	7	100	101	¾	120	19
3	5	100	111	3	123	10
4	5	100	105	¾	156	39
5	5	100	137	¼	230	67
6	12	120	130	½	128	0
7	34	200	152	½	178	17
8	¼	50	127	½	308	240

* All analyses were made according to the Folin modification of the method of Folin and Wu (Folin, Otto: The Determination of Sugar in Blood and in Normal Urine, J. Biol. Chem. **67**: 357 [Feb.] 1926).

† Blood sugar values are expressed in terms of milligrams per hundred cubic centimeters.

Table 1 illustrates the effect of the intramuscular injection of dextrose on the blood sugar level at various intervals after injection. All these patients, except patient 8, an anencephalic idiot, were suffering from acute diphtheritic myocarditis. In cases 2 and 5 there was a very definite increase in the blood sugar, although the second samples of blood were taken immediately after the completion of the injections. In case 6 the blood sugar appeared to have returned to normal at the end of half an hour.

TABLE 2.—*Results of Intramuscular Dextrose Tolerance Test*

Case	Age in Mo.	Cc. of Dextrose Solution Injected	Percentage of Dextrose in Solution	Weight of Patient in Kg.	Grams of Dextrose per Kg.	Blood Sugar (Mg. per 100 Cc.) Before Injection	Interval in Hours from Start of Injection ½	1	1½	2	3½
1	¾	45	10	2.7	1.7	143	376	368	352	240	...
2	2	30	10	6.8	0.44	74	209	161	104	71	...
3	14	25	15	5.1	0.73	102	...	150	109	101	107
4	24	100	10	10.9	0.91	104	304	296	222	141	105

Intramuscular dextrose tolerance tests were made on four patients. Patient 1 was an infant with a small meningocele and multiple deformities of the skeletal system. Patient 2 had a congenital hydrocephalus, spina bifida and spastic paraplegia. Patient 3 had a progressive hydrocephalus and a spastic paraplegia secondary to a meningococcus meningitis. Patient 4 had a large congenital hydrocephalus with an occipitofrontal diameter of 65 cm. The weights of these patients, because of the hydrocephalus, are of little importance in relationship to the amount of dextrose administered, except in case 1, in which the amount injected was about the same proportionally (1.5 Gm. per kilogram) as is usually given by mouth at the Michael Reese Hospital to adults in performing the dextrose tolerance test in the usual manner. Patient 1, because of the abnormally high fasting blood sugar, possibly had some congenital disturbance of carbohydrate metabolism. The curve in case 3 closely resembles that obtained from normal adults when the dextrose is given by mouth. The points of similarity are the rapid rise of the blood sugar shortly after the dextrose is ingested; the return of the blood sugar level to normal in an hour and a half, and a drop to slightly below normal in two hours. No reducing bodies appeared in the urine after the test in cases 2, 3 and 4. The urine was not examined in case 1. In case 4 the fontanels were tense at the beginning of the test. In from one-half to one hour after the dextrose was injected the fontanels became very soft and this condition persisted for several hours. Apparently the induced hyperglycemia had resulted in some absorption of the cerebrospinal fluid. This suggests the employment of intramuscular injections of dextrose in infancy to relieve increased intracranial tension such as may be due to intracranial hemorrhage, brain abscess or tumor, or other causes. The analogous use of hypertonic dextrose solutions intravenously in adults is too well known to require comment.

The practically immediate and rapid rise of the blood sugar following the intramuscular administration of dextrose suggests the employment of this method when the necessity of such a rise of blood sugar is in the nature of an emergency and intravenous or oral administration cannot be carried out. The outstanding condition of this nature is hypoglycemic coma following an overdose of insulin. I know of one instance of this in which intramuscular injections of dextrose were employed with completely satisfactory results. Should subsequent observations corroborate the value of intramuscular injections of dextrose in this condition, it

might be practical to put on the market solutions of dextrose in syringes ready for use similar to the way in which diphtheria antitoxin and other solutions are put up.

SUMMARY AND CONCLUSIONS

The intramuscular administration of a 10 per cent solution of dextrose in physiologic solution of sodium chloride or distilled water is a practical and relatively safe method for raising the blood sugar level, and is indicated in those conditions in which such a rise is desirable and other methods of administration are contraindicated.

The contraindications to the intramuscular administration of 10 per cent dextrose solution are the contraindications in general to intramuscular injection—the presence of a known hyperglycemia, and possibly the presence of a bacteremia.

The maximum rise in blood sugar following intramuscular injection of dextrose solution occurs within half an hour.

In one case of hydrocephalus the intramuscular injection of 10 per cent dextrose solution caused a very marked diminution in the tenseness of the fontanels.

Twenty-Ninth Street and Ellis Avenue.

Clinical Notes, Suggestions and New Instruments

A CASE OF HEMATURIA FROM SHOE DYE POISONING

O. J. SCHMITT, M.D., HOLLANDALE, MINN.

In a recent article[1] on shoe dye poisoning it was stated that injury to the kidneys or hematuria was not noted in sixty-one cases prior to the case reported. In a patient with shoe dye poisoning under my observation, hematuria was noted on the third day.

A student, aged 17, of athletic stature, wore freshly dyed shoes to school for seven hours, when cyanosis and headache made their appearance. When seen, three hours after the onset of the symptoms, his face and finger nails were deeply cyanosed and he complained of severe frontal headache. The shoes had been removed previously because it was thought that the disagreeable odor of the fresh dye aggravated the headache. The rate and character of the pulse, respirations and temperature were normal. He was advised to bathe the feet repeatedly in water; to take a sponge bath and a purgative; to drink large quantities of water; to put an ice cap on the head, and to rest near an open window. The cyanosis and headache had entirely disappeared by the next morning, but the patient was advised to remain quiet.

The urine the following day was a clear, dark amber, acid in reaction, and with a specific gravity of 1.025. Tests for albumin, sugar, methemoglobin and cellular elements were negative. Two days later the patient complained of dysuria and bloody urine. The blood pressure was 124 systolic and 80 diastolic; the red cell count, 4,120,000; leukocytes, 11,850, and hemoglobin, 75 per cent (Tallqvist). Alkaline drinks, together with a bland diet and rest in bed, were ordered, and in the following two days the pain gradually disappeared, the urine resumed its normal clear amber color, and at the end of five days no red blood cells could be found microscopically.

The analysis of the dye as reported by the chemist showed aniline as the source of poisoning. The container in which this dye was kept for daily use had no label whatever.

Another specimen of shoe dye labeled nonpoisonous was submitted for analysis. The solvent in this nonpoisonous dye was reported as oil of citronella, and, acording to the operator of the shoe shining parlor, the dye was entirely satisfactory and harmless when the shoes were worn immediately after dyeing.

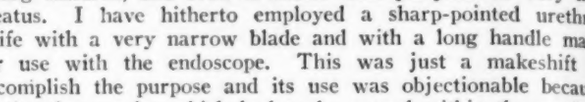
1. Haft, H. H.: Hematuria Due to Shoe Dye Poisoning, J. A. M. A. **90**: 742 (March 10) 1928.

A NEW MEATOTOMY KNIFE

AUGUSTUS HARRIS, M.D., BROOKLYN

During the past few years, I have needed a suitable meatotomy knife for the proper performance of meatotomy in male babies, young children, and even in adults with pin-point or very fine meatus. I have hitherto employed a sharp-pointed urethral knife with a very narrow blade and with a long handle made for use with the endoscope. This was just a makeshift to accomplish the purpose and its use was objectionable because of the sharp point which had to be passed within the urethra.

A few cases of retention of urine in babies could be relieved only by the passage of a small ureteral catheter, and would usually recur until I used the urethral knife just mentioned.



Meatotomy knife.

To my knowledge, the only small knife on the market is the Otis, with a belly-like blade and with a metal bulb at the tip. This cannot be passed into very narrow openings.

The knife here presented has proved very necessary and helpful in all types of cases in which a narrow meatus requires incision for cystoscopy, urethral catheterization or other instrumentation, and in certain cases of hypospadias.

The cutting edge is made flat with the tip of the blade narrowed but blunt; the back of the blade is also blunt, so that there can be no injury to the urethral membrane beyond the site of incision.

I believe that this knife should be a distinct advantage to urologists and surgeons in performing meatotomy in the male for relief of obstruction, or in making possible other necessary instrumentation.

The knife is made in two sizes, as follows:

Number 1, with width of blade 2.2 mm., and length, 14.5 mm.
Number 2, with width of blade 2.3 mm. and length, 17 mm.

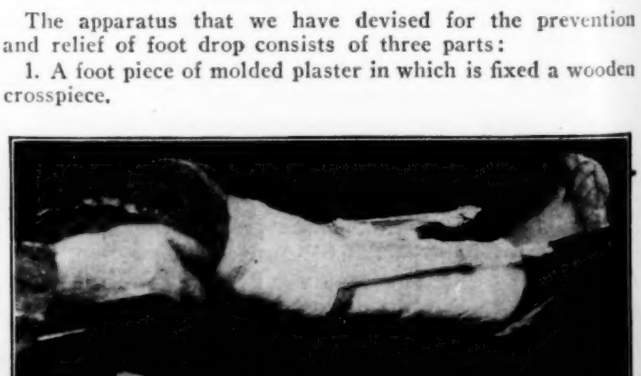
306 Park Place.

DEVICE FOR PREVENTION AND RELIEF OF FOOT DROP *

BRADLEY L. COLEY, M.D., AND DAVID ULMAR, M.D., NEW YORK

The apparatus that we have devised for the prevention and relief of foot drop consists of three parts:

1. A foot piece of molded plaster in which is fixed a wooden crosspiece.



Device for preventing foot drop.

2. Moleskin adhesive, which is attached to the leg and serves as an anchor.

3. Rubber bands, by means of which the foot piece is attached to the adhesive.

The foot piece is made by using several thicknesses of plaster bandage of proper width and length to conform to the sole of the foot. At about 1 cm. proximal to the ball of the great toe the wooden crosspiece, which can be conveniently made by binding two tongue depressors together with adhe-

* From the First Surgical Division, Lincoln Hospital.

sive, is incorporated in the plaster so that the ends protrude from the sides of foot piece. These protruding ends serve as points of attachment for the rubber bands.

The use of the adhesive does not need any explanation. If applied below the knee, motion at that joint is unimpaired.

This apparatus is useful for the prevention and relief of foot drop. It obviates the use of plaster boots, gutter splints, fracture boxes, and similar devices. It allows active motion at the ankle joint, is easily made and well tolerated by the patient, allowing him to be up and about either in a chair or with crutches. It also allows easy access to the dorsum of the foot, heel, ankle and leg, so that dressings can be simply done without the inconvenience of plaster windows, which would be necessary if a plaster boot were used.

114 East Fifty-Fourth Street—777 West End Avenue.

OSTEOMYELITIS OF THE COCCYX

W. P. BLOUNT, M.D., MILWAUKEE

Osteomyelitis of the coccyx is of sufficiently infrequent occurrence to warrant the report of a case in which a complete record is obtainable. The literature is surprisingly barren of similar summaries. Boland[1] cites one case which was complicated by stricture of the rectum. Tuberculosis of the coccyx is often included in discussions of Pott's disease and has been well discussed by David[2] as a specific entity. Pyogenic infections of the coccyx and sacrum have been written up with varying accuracy, but among the reports of thirty-one cases published by Monnier,[3] Gaudier[4] and Grisel[5] prior to 1912, there were none in which the diagnosis was definitely established. Disease of the sacro-iliac joint was not excluded in most of these. X-ray evidence was often lacking, and surgical measures were limited to incision and drainage.

The case reported here illustrates the possibility of recognition by physical and x-ray examination. The diagnosis was confirmed postoperatively by the gross, microscopic and bacteriologic observations. After complete removal of the diseased tissues, the patient went on to recovery.

REPORT OF CASE

R. H. S., a white man, aged 32, first examined in December, 1927, complained of periodic aching pain at the end of the spine which was of at least fifteen years' duration. It was much increased by prolonged sitting, upper respiratory infections and constipation. It had become increasingly severe and had been present almost constantly for nine months. The onset had not been preceded by any single trauma, but numerous falls on the ice and considerable horseback riding were cited as possible causes. At 11 years of age, just preceding the onset, a crop of boils persisted for several months.

A summary of the childhood diseases included mumps at 11 with atrophy of the left testis, and scarlet fever followed by a transient nephritis. The patient had gonorrhea in 1922. There were further crops of boils in 1907 and 1917. Appendectomy and a scrotal operation were performed in 1909, and tonsillectomy in 1920. Otherwise the past and familial histories were irrelevant.

Physical examination was entirely negative except for the essential pathologic condition. There was tenderness on palpation of the coccyx externally and by rectum. There were crepitation and pain on moving this bone.

Laboratory examination showed a trace of albumin in the urine, but no casts. The blood count was 9,950 leukocytes, with 67 per cent neutrophils, 20 per cent small lymphocytes, 5.5 per cent large lymphocytes, 5.5 per cent transitional cells, and 2 per cent eosinophils. There were 5,950,000 red cells with a hemoglobin of 95 per cent.

X-ray examination showed a destructive bone lesion of the coccyx and lower sacrum, surrounded by some sclerosis.

April 24, 1928, the coccyx and lower sacral segment were removed by Dr. F. J. Gaenslen through a dorsal midline incision. No actual pus was encountered, but smooth-walled excavations in the bone were filled with soggy granulation tissue. The coccyx was more friable than normally. All of the disease was eradicated, and the wound was closed. One drain was removed at the end of twenty-four hours. Except for a febrile rise with an upper respiratory infection on the fourth and fifth days, the convalescence was uneventful. A sinus persisted for one month, and then healed completely without residual symptoms. There has not been any recurrence.

Cultures from the granulation tissue showed *Staphylococcus aureus*. Microscopic study of the sections of bone and granulation tissue showed evidence of chronic inflammation. There was nothing to suggest a tuberculous etiology.

CONCLUSION

In long standing cases of pain in the region of the coccyx, osteomyelitis must be considered. Roentgenograms should always be taken. Surgical treatment may result in a complete recovery.

141 East Wisconsin Avenue.

1. Boland, F. K.: Osteitis of Coccyx, J. A. M. A. **88**: 1883 (June 11) 1927.
2. David, V. C.: Tuberculosis of Os Coccygis, J. A. M. A. **82**: 21 (Jan. 5) 1924.
3. Monnier, L.: : Rev. d'orthop. **15**: 161 (March) 1904.
4. Gaudier, H., and Bertein, P.: Rev. de chir. **44**: 238 (Aug.) 1911.
5. Grisel, P.: Rev. d'orthop. **23**: 313, 1912.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

W. A. PUCKNER, SECRETARY.

AEROSAN TABLETS NOT ACCEPTABLE FOR N. N. R.

The Aerosan Company of America, New York, distributor for Aerosan G. m. b. H., Berlin, Germany, offers Aerosan Tablets (which the firm proposes to market under a new name, "Benzomenteriodol") and a lamp for their vaporization as a "new dry inhalation treatment, by Dr. P. Rosenberg of Berlin."

With reference to the tablets that form the basis of the "treatment," a circular letter states: "All vaporizable medicaments which have proven their worth in the treatment of affections of the bronchial tubes have been combined in tablets which contain: menthol, terpene, pinene, benzoic acid ester, tetraiodopyrrol, chinoline bisulphate and paraform." The trade packages of the tablets "Aerosan Tabletten" offer no information in regard to composition. In the information sent the Council, the distributors stated that the respective quantities of each ingredient was not known to them and no information in regard to the identity of the benzoic acid ester was offered. (Subsequently, they stated the ester to be benzyl benzoate.)

Therapeutic claims are based on the "theory" on which the shotgun preparations of bygone days were founded, that of combining in one mixture all the medicaments that have been proposed for the treatment of a given condition. Thus the advertising enumerates the claimed qualities of each ingredient, without consideration as to whether any or all of the ingredients are present in amounts that will produce the desired effect. A German circular accompanying the tablets asserts that the inhalation of the vapors generated from the tablets will bring about the healing of all diseases of the respiratory passages including asthma, whooping cough and affections of the lungs (Lungenleiden). In this circular it is also asserted that the regular use of these tablets will act as a preventive of colds. The Aerosan Company of America proposes the use of Aerosan for the prevention of hay-fever, claiming that of one hundred patients given the preseasonal Aerosan treatments in Berlin, eighty were completely immunized.

As evidence for the usefulness of this complex mixture of nonquantitative composition, the Aerosan Company of America offers an article by Prof. Erich Leschke (*Deutsche med. Wchnschr.* **53**:1602 [Sept. 16] 1927). This article lauds the use of Aerosan but offers no evidence in favor of the combination presented by the tablets. It is typical of the puffs for proprietary mixtures which were to be found in American medical journals some twenty-five years ago.

Without considering for the present other conflicts with its rules, the Council declared "Aerosan"—to be marketed as Benzomenteriodol—unacceptable for New and Nonofficial Remedies because it is an unscientific mixture of indefinite composition which is marketed under unwarranted therapeutic claims.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 8, 1928

THE INVESTIGATION OF GERMICIDES

Postoperative wound infections following the preparation of the patient with the usual antiseptics are one of the great trials of surgical practice. Many surgeons feel that the number of infections is too great and investigators have toiled earnestly in the laboratories on the subject of skin disinfection. Various drugs have been studied and recently the use of dyes has been especially recommended, because these substances apparently remain in the field longer than aqueous or alcoholic solutions of the ordinary antiseptics.

In this issue of THE JOURNAL are two papers on the disinfection of the unbroken skin, and one on the use of antiseptics on mucous membranes. Because of the apparently contradictory statements in these presentations, it may be well to examine carefully the methods used in an attempt to discover the reasons for these discrepancies and to establish the actual clinical value of the germicides in question. Some differences in technic may account for some of the contradictory results. Simmons [1] and Rodriguez,[2] after taking swabs of the treated areas, streaked the material directly, without previous dilution, on the surface of an agar plate. This procedure, it is agreed, will give inhibitory effects and may be an unfair test, because no two drugs have exactly the same inhibitory index. One or both drugs may be inhibiting growth and not actually killing the organisms. In the experiments reported by Simmons and by Rodriguez, mercurochrome is being compared with tincture of iodine. It has been found that iodine inhibits at higher dilutions than mercurochrome, and it seems likely that the amount of iodine carried over to the plates might have been sufficient to inhibit growth of the bacteria without being bactericidal. If such a method is used, plates may be streaked with a fresh culture of the organisms and this used as a control. If growth occurs, this will be sufficient proof that the drug is not present in inhibitory strength, while if growth does not occur inhibition is proved. In the methods used by Reddish and Drake,[3] scrapings from the skin surface were washed into a petri dish with sterile water and the plate then poured. This procedure in itself dilutes considerably any antiseptic that may be present. In addition, the plates were streaked with a fresh culture of the organisms used in these tests and growth was observed along the streaks in every case. These experimenters have thus proved apparently that drug inhibition is not concerned in their tests.

Simmons and Rodriguez swabbed the surface of the skin with an undiluted twenty-four hour culture, so that the organisms were present in numbers probably much greater than are found under practical conditions. Even with the most potent germicide, if a sufficiently large amount of culture is used and a sufficiently small amount of antiseptic applied, it will be found that the drug is ineffective. It is well known that, when in vitro tests of antiseptics are being made, the amount of culture added to each tube has to be the same. If the amount of culture added is greatly increased, it will be found that the germicide is no longer sufficient to kill all the organisms present. This is, of course, largely due to the fact that the drug is adsorbed on the organic matter present in the culture. The question of penetrability has also to be taken into account, for if an excessively heavy inoculum is employed the disinfectant will not only become adsorbed but will further have to penetrate a thick layer of dried organic material remaining from the medium. Reddish and Drake have used an inoculation which places on the skin fifty times the average number of organisms found on the skin of dirty patients. The method seems to provide a wide margin of safety, without being unpractical. Whatever the final results of laboratory experiments may be, reliance should not be placed solely on such results; clinical observations must be considered. This idea is well expressed by Muir and Ritchie,[4] who state that "laboratory experiments alone cannot give accurate information as to the action of antiseptics within the living body—e. g., in a wound." Experience under laboratory conditions must be supported by clinical observations before such experiments can be taken as final.

The experiments reported bring into consideration the criteria of a good germicide. The primary use of a skin disinfectant is to kill any pathogenic organisms which may be present on the skin. This does not necessarily imply, however, that every organism should be killed, but that the number should be reduced to such an extent that the natural defensive mechanism of the body can successfully combat those which may remain. The disinfectant must, however, reduce the organisms to a safe number within a reasonable period; that is to say, within the time allowed for preoperative preparation. This time is usually about five minutes, and the

1. Simmons, J. S.: The Bactericidal Action of Mercurochrome-220 Soluble and Iodine Solutions in Skin Disinfection, this issue, p. 704.
2. Rodriguez, F. E.: Mercurochrome and Iodine as Disinfectants of Mucous Membrane of Mouth, this issue, p. 708.
3. Reddish, G. F., and Drake, W. E.: Mercurochrome-220 Soluble and U. S. P. Tincture of Iodine: Comparison of Germicidal Efficiency in Skin Disinfection, this issue, p. 712.
4. Muir and Ritchie: Manual of Bacteriology, London, 1921.

drug should therefore be capable of disinfecting the skin efficiently within five minutes. It should also penetrate the epithelial débris that is always present. In order to do this, the solution should be capable of dissolving the fatty excretions of the skin and should therefore contain alcohol or some such solvent. The solvent should be of such a nature as to permit fairly rapid drying. It is important in preoperative skin disinfection that the substance used should stain the field in order that the treated area may be clearly defined. If a colorless solution is used there is always some doubt as to the exact extent of the area which has been covered. The disinfectant should not unduly irritate the skin of the patient. This is of great importance where the external genitalia and other sensitive regions have to be cleansed prior to operations. Many caustic and corrosive substances are excellent in killing bacteria, but, because of their severe action on the skin, they cannot be used. A great many postoperative infections have undoubtedly followed blistering by the disinfectant used in the preparation of the patient. It is desirable, finally, that the disinfectant should not be unduly toxic and should not precipitate proteins and albumins, since it frequently happens that the substance has to be instilled into the peritoneum in abdominal operations. Before judgment is passed on an antiseptic, all such points must be considered in addition to any results obtained in in vitro and laboratory tests. Many substances give excellent results under laboratory conditions yet are found to be undesirable in clinical practice.

NATURAL FOOD PIGMENTS

Probably the most obvious and yet the least considered of the properties of the human dietary, taken as a whole, is its color. The blue, red, yellow and orange of fruits, the green, red and yellow of vegetables, and the brown and red of meats are so well identified with those foods which provide the better known dietary essentials that these pigments are taken as a matter of course. An attempt to devise a colorless experimental ration is attended with so much difficulty that one is readily convinced of the ubiquity of natural food pigments. Efforts have been made to evaluate the physiologic significance of the pigments that have been recognized as chemical entities, but it would appear that until recently hemoglobin has been the only naturally occurring coloring substance in foods whose function has been even roughly defined. There is evidence that when taken by mouth it has value as raw material from which the body can make new blood pigment. On the other hand, chlorophyll, which is somewhat similar chemically, cannot be classed as a substance unequivocally favorable to hematopoiesis. The available evidence does not attribute any proved function for the other food pigments, with the notable recently discovered exception of carotin.

In addition to the green chlorophyll there occur in the leaves of plants two pigments, xanthophyll and carotin, which form yellow solutions. They can be found in other parts of the plant also and may be demonstrated in yellow corn, carrots and sweet potatoes. These pigments are similar in that their crystals are yellow, rose or copper colored with a metallic sheen. They differ in their solubilities and in their susceptibility to oxidation. Carotin is a hydrocarbon, while xanthophyll contains oxygen in addition to carbon and hydrogen. These pigments are always found together in plant and animal tissues, though in varying ratios. It has been shown that the carotin of milk fat, blood serum and adipose tissue of cattle is derived from the carotin-bearing food which they eat, while the xanthophyll, which predominates in egg yolk, in the skin of the legs of chickens and in their beaks, is present or largely absent in these structures depending on whether the fowls are given food containing xanthophyll or are provided with a ration lacking the pigment. There is a striking parallelism between the occurrence of vitamin A and these yellow pigments in nature, but careful studies have shown that neither purified xanthophyll nor carotin can replace this fat-soluble factor in the diet. The function of these commonly occurring pigments has come to be somewhat of a mystery.

Light has recently been thrown on the question by the extensive experiments of Underhill and Mendel[1] in which dogs were fed a restricted ration for some months until they developed indications of marked malnutrition characterized by lesions in the mouth and along the gastro-intestinal tract. They found that the syndrome could be prevented and cured by food materials rich in carotin and finally showed that as little as 5 mg. daily of crystallized carotin was efficacious. In view of the well controlled conditions of the experiment, the results indicate an extraordinary potency of this pigment or some substance closely associated therewith and a definite need for it on the part of the organism. Experiments of a somewhat different nature, carried out with guinea-pigs, have been reported from Harvard.[2] In this case a solution of carotin in olive oil was injected intraperitoneally with the result that, at necropsy a month after the injections were begun, granulomatous lesions were found in the mesentery, on the spleen and on the liver. They were yellow fatty masses, and the whole phenomenon seemed characteristic of a foreign body type of reaction in the tissues. Small nodules were likewise seen on the under side of the omentum and seemed to follow the lymphatic vessels. A control animal injected with olive oil alone showed none of these reactions.

These two studies suggest several possibilities as explanation of the observed facts. There may be a specific difference between the two groups of animals.

1. Underhill, F. P., and Mendel, L. B.: Am. J. Physiol. **83**: 589 (Jan.) 1928. An Experimental Deficiency Disorder, editorial, J. A. M. A. **90**: 1119 (April 7) 1928.
2. Connor, C. L.: Am. J. Path. **4**: 227 (May) 1928.

This seems unlikely in view of the large amounts of carotin which the herbivorous guinea-pig certainly ingests under natural conditions of feeding. Carotin administered by mouth is probably no more toxic for the guinea-pig than for the dog; but it seems likely that, in the course of digestion of dietary carotin, and its subsequent absorption, the pigment molecule is changed and in the altered form provides a physiologic essential while, when given intraperitoneally, it may act as a foreign body. Such a conception is not without precedent, for sucrose, concerning whose utilization and food value there is no question, when given parenterally is treated by the body as a foreign substance and is excreted in the urine.

NIGHT-BLINDNESS IN NEWFOUNDLAND

Ever since Osborne and Mendel called attention, more than a decade ago, to the occurrence of certain types of ophthalmia in animals that have been deprived of vitamin A, increasing instances of comparable deficiency disorders in man have been placed on record. It is characteristic of medical progress that when the details of a supposedly new syndrome are announced the clinical picture is clearly brought to the mind of physicians. Characteristic instances are resurrected from past experience and new cases are more promptly recognized. Medical literature includes numerous examples of the prevalence of eye disorders in regions in which malnutrition may be supposed to exist. Thus xerophthalmia, the best known striking abnormality attributable to a shortage of vitamin A, has been reported for communities subjected to famine. Strangely enough, the empiric treatment in some of these instances has involved the use of cod liver oil and the livers of birds, foods that have since been demonstrated to be rich in vitamin A.

Functional hemeralopia, or night-blindness, has long been known to be prevalent in certain countries where food shortage may frequently become a reality. With the growth of our newer knowledge of nutrition this eye condition also has been ascribed by some students to a vitamin deficiency. Traditionally, night-blindness has been associated with scurvy and likewise with beriberi. These maladies are now known quite definitely to be an expression of a shortage of vitamins C and B, respectively. Experience gained by Aykroyd [1] in Newfoundland leads him to the conclusion that the functional hemeralopia observed in men during the summer in that country is not directly associated with beriberi or scurvy but rather is an outcome of a shortage of foods rich in vitamin A. In any event the effective treatment consists of the inclusion of suitable dietary articles in the ration, all of which contain a liberal content of vitamin A. Aykroyd reminds us that the Newfoundlanders, a third of whom are of Irish descent, live ordinarily on a diet that is admittedly deficient in fat-soluble and other vitamins. The winter regimen includes salt pork, wheat flour, margarine, molasses, some potatoes, cabbages and turnips (which often run out). The situation is not much better in the summer, though fresh fish, eggs, poultry and game may be eaten. In any event, a routine ration of white bread and salt meat has obvious limitations from the standpoint of its vitamin contributions.

The most popular remedy for night-blindness has been bird's liver, cooked or raw. Aykroyd reports that birds' hearts, rabbits' livers, cods' livers, or cod liver oil are sometimes taken, "the last more rarely, having small honor in its own country." Most cases clear up in a few days after a few meals of liver. As Aykroyd remarks, it is indeed ironical that a people who supply a great part of the world with vitamin A should themselves sometimes suffer from a lack of it.

1. Aykroyd, W. R.: Vitamin A Deficiency in Newfoundland, Irish J. M. Sc., Series 6, number 28, p. 161 (April) 1928.

Current Comment

BOTULISM AND HOME CANNING

THE JOURNAL has for several years summarized reported outbreaks of botulism. Whereas, for several years, outbreaks have not been accredited to commercial canned products, a small number of outbreaks of botulism have been proved to be due to certain food products canned by home canning methods. Botulism is a comparatively rare disease; nevertheless, the fatalities and the fantastic publicity have focused attention on the disease and on methods of prevention by public health officials. There is generally a wide difference in the sterilizing time and temperatures used for commercial and home canning, a fact often stressed to the detriment of home canning. A striking number of outbreaks have been associated with nonacid vegetables, such as string beans, corn and spinach. In fact, it could be considered dangerous to can such vegetables unless under the most stringent of sanitary regulations and unless the heat penetration, the hydrogen ion concentration of the product and the thermal death point of the possible poisonous bacterial contamination were known and taken into consideration. Even if these were accurately known, canning by the water bath method should not be done, especially in certain localities. The teaching of home canning methods is usually a part of the curriculum of agricultural colleges and of the department of home economics of colleges and universities. Among these there is apparently a wide difference of sterilization methods. For instance, *Good Housekeeping* [1] offers an article emanating from the home economics department of Iowa State College, based on a local study in home canning by Sunderlin and others.[2] The sterilizing time for string beans and corn with acid was given as one and one-half and two and one-half hours, respectively, in the boiling water bath (212 F.), and for string beans without acid, two and one-half hours. Spoilage was admitted to occur in these products so canned, especially at incubator

1. July, 1928, p. 94.
2. Sunderlin and others: Iowa State College J. Sc. 2: 189 (April) 1928.

temperatures. In direct contrast, Cruess,[3] an exceedingly careful investigator of home canning methods, advocates for string beans a sterilizing process of thirty minutes at 240 F. and for corn ninety minutes at 240 F., cans size 2½. Moreover, Cruess makes this statement: "As explained later in this circular, vegetables are home canned by several different methods. However, so far as the Western states are concerned there is recommended only one of these methods; namely, sterilization under pressure. For such vegetables as peas, corn, string beans, spinach, asparagus, root vegetables and *meats*, various boiling water methods are very unsafe and should not be used." The difference of opinion or lack of unanimity is so manifest that further study of home canning methods is obviously necessary. In fact, it appears imperative since recent inquiries have shown that home canning methods are employed for semicommercial purposes by inexperienced people in rural districts. The vegetables and meat products of the farmers in certain communities are brought to a so-called home canner, packed in tin containers, rarely exhausted, and subjected to heat in a steam bath or retort with uncontrolled pressure gages and thermometers for periods which are mostly determined by empiric methods. How much harm such canneries have done or may do it is difficult to estimate. In California this type of cannery can be properly controlled by license and by supervision through the cannery inspection service of the department of health. In remote territories of the country their detection is a matter of chance.

THE UTILIZATION OF BLOOD TRYPTOPHAN IN MILK SECRETION

The discovery that, prior to absorption, the proteins ingested are largely disintegrated by digestion into their component amino-acids, and that the latter circulate freely in the blood on their way to various organs and tissues, has made the metabolism of the nitrogenous foods in the body preeminently a consideration of the fate of amino-acids. Interest in these ideas has been enhanced by the demonstration that certain, at least, of the eighteen or twenty well known amino-acids of protein origin are indispensable in the sense that they are requisite for fundamental syntheses in the organism and must be supplied as such because they cannot be manufactured de novo by animal cells. Tryptophan has received particular consideration as a demonstrably essential amino-acid. An exceptionally interesting illustration of the way in which it enters into its functional rôle has been furnished by Cary and Meigs[4] of the Bureau of Dairy Industry in their investigations on the genesis of milk constituents. It is well established[5] that the mammary gland uses *d*-glucose of the blood as a source of lactose and that the phosphatide and amino-acids in the plasma of the blood enter into the synthesis of the fat and protein, respectively, of milk. Such facts have been established by analytic comparisons of samples of blood taken simultaneously from the jugular and abdominal subcutaneous (mammary) veins of lactating and nonlactating cows. The difference in composition between the two bloods is assumed to represent the material removed from blood by the mammary gland for use in milk secretion. In nonlactating animals the differences are ordinarily negligible, corresponding to the inactive condition of the mammary glands. During lactation, on the other hand, the free tryptophan of the blood is removed in quantities adequate to correspond with the amount of this amino-acid required in the synthesis of the milk proteins. Such discoveries bear witness to the enrichment of physiologic research by the micromethods of modern biochemistry.

3. Circular 276, Revised, June, 1928, Department of Agriculture, University of California.

4. Cary, C. A., and Meigs, E. B.: The Free Tryptophan in Cow Blood and Its Utilization in Milk Secretion, J. Biol. Chem. **78**: 399 (July) 1928.

5. Meigs, E. B.: Physiol. Rev. **2**: 204 (April) 1922.

LAPAROTRACHELOTOMY

In 1922, De Lee and Cornell[1] reported their results with low cervical cesarean section, or laparotrachelotomy. Previously some twenty different modifications of the low operation had been devised. De Lee and Cornell recognized the soundness of the principles that underlay all of them: "the avoidance or limitation of peritoneal exposure, and the location of the uterine scar in the neck of the uterus." Using the method which they devised, they performed 145 laparotrachelotomies. In these operations they lost only one mother, and all of the babies lived except two who were dead even before the mothers entered the hospital. This record is striking when it is compared with a maternal mortality of six in the course of 122 classic sections which were performed in the same hospital in the course of the eight years previous to the preparation of the report. A further report on laparotrachelotomy was published by De Lee[2] in 1925. In this article he included the 145 cases previously reported and added 185 more, making 330 cases in all. Of the two maternal deaths recorded in the total series only one can be ascribed to the operation. After this further experience with the method, De Lee claimed the following advantages for it:

1. A decidedly lower mortality.
2. A decidedly lower primary morbidity.
3. A greater guarantee against rupture of the uterus in subsequent pregnancy and labor (only five cases on record, all during labor, and three improved).
4. A greater guarantee against intraperitoneal adhesions.
5. Much less likelihood of utero-abdominal fistula (no case yet reported), and fewer hernias.
6. The permissibility to extend the indication for abdominal delivery to cases of neglected labor, even when infection is suspected. Thus we reduce the field of craniotomy on the living child almost to the vanishing point.
7. The possibility of giving the parturient a real test of labor before concluding that abdominal delivery is necessary. Thus many of the latter will be avoided.
8. A broadening of the indication for abdominal delivery for the purpose of saving the life of the child and preventing damage to the mother's soft parts.

1. De Lee, J. B., and Cornell, E. L.: Low Cervical Cesarean Section (Laparotrachelotomy): Results in One Hundred and Forty-Five Cases, J. A. M. A. **79**: 109 (July 8) 1922.

2. De Lee, J. B.: Low or Cervical Cesarean Section (Laparotrachelotomy): Three Hundred and Thirty Operations, with Two Deaths, J. A. M. A. **84**: 791 (March 14) 1925.

Recently Stein and Leventhal [3] and Danforth and Grier [4] have reported more than five years' experience with this operation. Stein and Leventhal have operated fifty times; Danforth and Grier, forty times. Neither group has lost a single mother, and in each series all babies but one left the hospital alive. These figures, it would seem, should be given serious consideration by those who still advocate the classic cesarean section.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—The Ouachita County Medical Society and druggists held a joint meeting at Camden, August 2. Following a barbecue, the members voted to favor a basic science law and copies of the vote were sent to the county legislators.——The St. Francis County Medical Society was addressed, August 7, by Dr. Francis Walter Carruthers, Little Rock, on diagnosis and treatment of osteomyelitis.

CALIFORNIA

Effect on Cells of Sound Waves.—Members of the chemistry staff of the University of California have devised instruments and methods for measuring the effect of sound waves in high frequency phases on some protozoa. They have demonstrated, it appears, that sound waves emanating from a crystal vibrating at the rate of 750,000 times a second will kill large protozoa with great rapidity, tearing their gill filaments from their bodies as if they had been struck by a solid object. They found also that planarian worms when touched lightly with a needle carrying high frequency sound vibrations are burned. It was possible, the chemists said, to observe the cells through the microscope while subjecting them to the sound waves, and see that the destruction of the cells was due to actual disruption and to a coagulation of the protoplasm. Short exposures to the high frequency sound resulted in a sort of preliminary paralysis which ended in the death of the cell if the exposure was continued. They suggested on the basis of their experiments that a denaturation of the proteins in protoplasm may be an important factor in the lethal effect of sound waves on protozoa. With the delicate apparatus improvised for this work, they were able to observe the effect of sound waves not only on individual cells but also on the nucleus and other parts of the cell.

COLORADO

License Revoked.—The Colorado State Board of Medical Examiners reports that the license of Dr. Oscar A. Duncan, Aguilar, was revoked, July 3, on a charge of murder following an abortion. Dr. Duncan graduated from St. Louis University in 1905 and was also licensed in Kansas.

Increase in Death Rate.—The death rate for Colorado for 1927 was 1,218 per hundred thousand of population, according to the U. S. Department of Commerce, as compared with 1,159 in 1926. The increase is largely accounted for by increases in the rates for measles, malignant tumors, heart disease, scarlet fever, meningitis, diarrhea and enteritis. There were decreases in 1927 in the death rates for whooping cough, influenza and tuberculosis.

CONNECTICUT

Personal.—Thomas B. Osborne, Ph.D., for forty-two years chief of protein research, Connecticut Agricultural Experiment Station, New Haven, has retired from the active direction of the laboratory, and Hubert B. Vickery, Ph.D., who has been associated with Dr. Osborne for several years, has been appointed biochemist in charge. Dr. Osborne assumes the title of advisory biochemist.

Fourth Clinical Congress of State Society.—The Connecticut State Medical Society will hold its fourth annual clinical congress, September 18-20, at New Haven. All physicians are invited. Last year there were about 400 in attendance from nine states. The registration fee is $5; medical students and hospital interns will be admitted free. The principal speakers were noted in THE JOURNAL, July 21, page 177. Following luncheon, the congress will convene in the Brady Surgical Building of the New Haven Hospital for practical clinical demonstrations of many subjects. The time available will permit attendance at three classes. Physicians registering should indicate on the card the classes they desire to attend. Yale University has given over one of its dormitories for members of the congress where rooms may be occupied for $2 a night. If hotel rooms are preferred, reservations should be made directly with the hotel. Inquiries should be addressed to Dr. Creighton Barker, 129 Whitney Avenue, New Haven. The president of the congress is Dr. David Chester Brown, who is also a member of the Board of Trustees of the American Medical Association.

DISTRICT OF COLUMBIA

Society News.—The thirty-fourth medical regiment, which consists almost entirely of residents of the District of Columbia, recently returned from two weeks' active duty at Carlisle Barracks, Pennsylvania, under the command of Col. Warren P. Morrill, medical reserve corps. Nearly all the officers of the regiment have seen service in the Spanish-American War, on the Texas border or in the World War.——Dr. Gideon Brown Miller has been appointed chief associate examiner on the Washington Subsidiary Board of the National Board of Medical Examiners.

Dr. Redden Resigns from the Red Cross.—Dr. William R. Redden, medical assistant to the vice chairman of the American National Red Cross, Washington, has resigned on account of ill health. Dr. Redden, who has been with the Red Cross since April, 1924, has taken part in several large disaster relief operations. Following the organization of the state health authorities under the service of the Red Cross for combating epidemics which might follow the great Mississippi flood, he was obliged to take extended leave following a physical breakdown in the field.

Scientific Survey of Eye Sight of School Children.—The most complete study of the visual condition of a large group of school children conducted under favorable conditions, says the Eye Sight Conservation Council of America, New York, was recently made by the U. S. Public Health Service, cooperating with the departments of health and education of the District of Columbia, which examined 1,860 unselected white school children in Washington. The examinations comprised the simple visual test with letters and refraction of the eyes with the accommodation suspended. The work was begun under the supervision of Sr. Surg. Taliaferro Clark and was completed under the direction of Surg. Grover A. Kempf, the examinations being made by Asst. Surg. Bernard L. Jarman. Only 3.4 per cent of these children were found free from refractive errors, the most prevalent one being farsightedness, of which there was 63 per cent; astigmatism affected 28 per cent, and nearsightedness 5.5 per cent. While the defects found included slight errors not needing correction, the conclusion reached by those who performed the work was that glasses were needed by 34 per cent of the entire group and that glasses should be recommended for reading for an additional 10 per cent. The survey emphasized the fact that the simple visual acuity test reveals only a small percentage of the actual number of refractive errors in children, for it indicated in this survey that 34 per cent of the children had defective vision and 66 per cent normal vision, whereas with the accommodation suspended an extraordinary difference was shown. The survey indicated further that while nearsightedness is nearly always discovered by the simple visual acuity test, farsightedness is frequently not detected and only the severe types are revealed.

FLORIDA

Personal.—Dr. Courtland D. Whitaker, formerly of Atlanta, has been appointed prison physician at the State Farm Hospital, Raiford, to succeed Dr. R. D. Ferguson.——Dr. Abelardo Martorell has resigned from the staff of the old Centro Asturiana Hospital, Tampa.

Society News.—At the July 9 meeting of the Sarasota County Medical Society, Sarasota, Dr. John E. Harris read a paper on ringworm, and J. R. Scully, V.S., on tularemia.——

3. Stein, I. F., and Leventhal, M. L.: Laparotrachelotomy: An Analytic Report of Forty Consecutive Operations Without a Death, Am. J. Obst. & Gynec. **16**: 229 (Aug.) 1928.

4. Danforth, W. C., and Grier, R. M.: Five Years' Experience with Low Cervical Cesarean Section, Am. J. Obst. & Gynec. **16**: 239 (Aug.) 1928.

The DeSoto-Hardee-Highlands County Medical Society was addressed, July 10, by Dr. Robert L. Cline, Lakeland, on sinus infection.——The Columbia County Medical Society was addressed in July by Drs. Luther W. Holloway on "The Thymic Syndrome," and Wilfred M. Shaw, Jacksonville, on "Spontaneous Pneumothorax in a Child."

IOWA

Society News.—About eighty-six persons attended the joint meeting of the Fayette and the Clayton county medical societies, July 10; a boat ride on Lake Oelwein and a game of kitten ball, which Fayette County won, featured the entertainment.——The Buchanan County Medical Society sponsored a chest clinic at the People's Hospital, Independence, July 6, and was addressed on coronary disease and bronchiectasis.——Dr. Russell H. Kanable, Des Moines, conducted a chest clinic before the Harrison and Louisa county medical societies in July; Dr. Merrill M. Myers, Des Moines, was one of the visiting clinicians at the latter clinic also.——About 150 persons attended the dinner and evening session following the clinic of the Marshall County Medical Society, Marshalltown, in June; Dr. William W. Pearson, Des Moines, spoke on "Fishing in the Pacific." The clinicians at the afternoon session were Drs. Everett D. Plass, professor of obstetrics and gynecology, and head of the department, State University of Iowa College of Medicine, Iowa City, and Dr. Lester D. Powell, Des Moines.——A family picnic was served at the sixth annual Twin Lakes District meeting, July 19, by about eighty wives of members; there were about 150 physicians present.——Dr. Charles H. Graening, Waverly, was elected president of the Austin Flint-Cedar Valley Medical Society at the July meeting at Cedar Lake and Mason City; about 100 physicians were present.——Dr. Jonas Curtis Lyter, St. Louis, addressed the Waterloo City Medical Society, June 20, on the medical aspects of thyrotoxicosis at the last meeting of the society's fifteenth year; the next meeting will be held in September; one of the features of these meetings has been that of having an "out-of-town" speaker address each one.——Drs. Andrew B. Rivers and Winchell McKendree Craig, both of Rochester, Minn., addressed the Clinton County Medical Society, Clinton, on "Complications of Peptic Ulcer" and "Surgical Treatment of Spinal Cord Lesions," respectively.——Dr. Aaron C. Conaway, Marshalltown, has been appointed councilor of the fifth district of the state medical society, succeeding Dr. George E. Crawford, Cedar Rapids, who has been active in medical organization work for many years.

KANSAS

Society News.—The Dickinson County Medical Society, Hope, was addressed, July 27, by Dr. Abraham L. Blesh, Oklahoma City, on goiter.——At the July 18 meeting of the Norton-Decatur Medical Society, Norton, Drs. Walter E. Reckling, Lenora, spoke on "Nonspecific Protein Therapy in Treatment of Vincent's Angina"; Seth L. Cox, Norton, on "Tuberculosis and the General Practitioner," and Marion J. Renner, Goodland, on "Abortions and Their Treatment."

Personal.—Dr. Willard W. Nye, Hiawatha, after seventeen years' service as health officer of Brown County, resigned in June. The question of a full-time county health officer was discussed by the county medical society, which decided that there is not sufficient demand for the full-time services of a physician, and that it would like Dr. Nye reinstated on a part-time basis.——Dr. James E. Wolfe has been appointed university physician for Friends' University, Wichita, and will also teach physiology and hygiene. Dr. Wolfe is city physician of Wichita.

LOUISIANA

Personal.—Carr T. Dowell, Ph.D., has assumed the duties of dean and director of the college of agriculture and experiment stations at Louisiana State University. Dr. Dowell was formerly assistant professor of chemistry at Tulane University, and dean of the Oklahoma A. and M. College.

Suit Filed to Unseat Dr. Dowling.—Dr. Joseph A. O'Hara, New Orleans, whom Governor Long recently appointed president of the Louisiana State Board of Health, has filed a suit in the civil district court at the request of the governor, it is reported, charging that Dr. Oscar Dowling who has been president of the board for many years is not a duly qualified elector and is disqualified from holding any state office. Attorneys for the plaintiff contend that the office of president of the board of health has been vacant for some time because Dr. Dowling is ineligible by virtue of the fact that while his residence is in New Orleans, he votes in Shreveport. Dr. Dowling is resisting the attempt of the governor to remove him. He claims that his term of office does not expire until 1932. The other side claims that the title to the office rests with Dr. O'Hara by virtue of act 126 of 1928.

MARYLAND

Society News.—The National Negro Business League has presented to the health officer of Montgomery County, Dr. William T. Pratt, Rockville, a silver cup for the most effective health demonstration of any rural community during the annual national negro health week, April 1-8.

Typhoid at Williamsport.—Twenty-five cases of typhoid have been reported in Williamsport and vicinity. Hundreds of persons have applied at the health center for vaccination against typhoid and some industrial plants have arranged to have their employees vaccinated. The source of the infection had not yet been determined. The situation in that community was considered the most serious of its kind in years.

Outbreak of Infantile Paralysis.—The number of cases of infantile paralysis reported in the city of Baltimore at the time of this report in August exceeded the number reported in August in 1916, 1921 and 1924. The director of the state department of health reported that eighty-six cases had occurred throughout the state, while prior to August 1 only ten cases had been reported this year. The situation in Baltimore is not considered alarming and the public schools will open at the usual time.

Preventorium for Employed Women.—The Maryland Tuberculosis Association will keep open during September and October the children's preventorium at Claiborne to give a vacation to underweight and tuberculosis contact business women between 18 and 30 years of age. One hundred children who have been receiving special care were dismissed, August 26. This will be the first adult preventorium program conducted in Maryland, and if found practical will be continued in April and May as well as in the fall each year.

MICHIGAN

Society News.—Forty cases of smallpox were reported in Shelby and Au Grae as of August 25.——Dr. Henry E. Perry, Newberry, was elected president of the Upper Peninsula Medical Society at its recent annual meeting.

Grand Rapids Honors Yellow Fever Hero.—The city of Grand Rapids has dedicated to and named in honor of the late Private William H. Dean of Troop B, Seventh Cavalry, a new bridge which spans the Grand River at Fulton Street. The heroism of Private Dean was memorialized also by the Kent County Medical Society, which at the dedication recognized the value of his service in an official letter to his parents and to local members of the Senate and House of Representatives. Private Dean was one of several American soldiers who volunteered to be bitten by mosquitoes infected with yellow fever in Cuba in 1900 in the epochal experiments of the U. S. Army Board on the method of transmission of yellow fever, of which the late Major Walter Reed was in charge. For years the identity of Private Dean was unknown. He was listed in the records of these experiments simply as X Y (an American soldier). His name was concealed at that time because he was allowed to be bitten by mosquitoes without military authorization. He took sick with yellow fever, Sept. 6, 1900, and recovered. His case was of special importance, said Surgeon General Torney, as it was the first experimental case which was complete in the matter of control. He was discharged from the army, Aug. 17, 1902, by expiration of term of service. For many years the war department had no further record of him, and it was almost by accident that Grand Rapids, with the exception of relatives and close friends, discovered that he was one of her citizens. He was a quiet man, working at his trade under the handicap of a heart affliction, of which he recently died. His stepfather and mother, Mr. and Mrs. Norman O. Wood, live in Grand Rapids.

MISSISSIPPI

Society News.—At the August 13 meeting of the Issaquena-Sharkey-Warren Counties Medical Society, Vicksburg, Drs. Walter H. Scudder, Mayersville, presented a paper on "Unique Cases of a Country Doctor"; Ewing F. Howard on mastoiditis, and A. Street, Vicksburg, on carcinoma of the stomach.——The state legislature in April appropriated $200,000 for a hospital to be used as a charity hospital and to furnish clinical material for teaching medical students.

MISSOURI

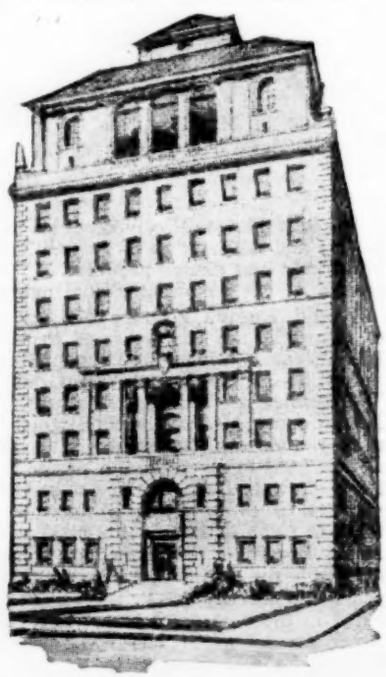
License to Practice Stolen.—The director of the department of public welfare of Nebraska reports that Nebraska license number 5494, issued to Dr. Eugene A. Miller of St. Joseph, was stolen from his office in the Kirkpatrick Building, between July 27 and July 30.

Horton's Pharmacy License Revoked.—The state board of pharmacy, August 2, revoked the license of Dr. Robert B. Horton, following a hearing in Kansas City. The board sustained a charge that Dr. Horton had accepted money as payment for "influence" in the attempt to obtain a license for another person (THE JOURNAL, Dec. 3, 1927, p. 1973).

Hospital News.—The fifty-bed Pike County Memorial Hospital, Louisiana, was opened, July 2. The institution was donated by the late Otis Smith and Susanah Barr.——A site has been bought for the $1,000,000 St. Louis County General Hospital. The county paid $100,000 for 28 acres on the west side of the North and South Road just north of the Clayton Road. The first unit of the hospital will be built shortly.

Personal.—Dr. Charles H. Nielson, president of the St. Louis City Medical Society, has been appointed associate dean of St. Louis University School of Medicine to succeed the late Dr. Don R. Joseph. Dr. Nielson is an alumnus of Rush Medical College and has been a member of the staff of the St. Louis University School of Medicine for many years.——Dr. Ernst Von Quast, Kansas City, celebrated his seventy-fifth birthday, August 21.

Eye, Ear, Nose and Throat Research Center.—In raising a fund of $4,000,000 for the erection and endowment of an eye, ear, nose and throat hospital, Washington University, St. Louis, plans to provide a research center for these specialties. The late Mrs. William McMillan gave $1,200,000 and the General Education Board offered $1,500,000, provided an additional million was raised elsewhere. The construction of the McMillan Hospital is to be undertaken at once on a site just east of the new St. Louis Maternity Hospital. The directors of the new institution will be Drs. Harvey J. Howard, formerly professor of ophthalmology at Peking Union Medical College, and Lee Wallace Dean, formerly dean and head of the department of ophthalmology, otolaryngology and oral surgery, State University of Iowa College of Medicine, Iowa City. This will be the first hospital of the Washington University group which will be open to any reputable specialist. The tentative program for research covers the problems of cataracts, glaucoma and trachoma, the latter being prevalent in Missouri. It is planned to establish a division for the examination of airplane pilots in which work Dr. Howard, as war-time consultant at Mineola Field, Long Island, has had experience. To secure the fund offered by the General Education Board, additional funds must be obtained before the close of this year. The McMillan Hospital will be a nine story building, with wards for white patients on the fourth floor, beds for private patients on the fifth, research laboratories on the three floors above, and clinics on the lower floors. It will also provide facilities for graduate work.



NEW MEXICO

Society News.—The state department of health prosecuted a physician in July for failing to file a birth certificate within ten days after birth and for filing his certificates directly with the department instead of with the local subregistrar or health officer. Action was taken only after two personal requests, and was made on only one of forty-four birth certificates from him. He pleaded guilty and paid the costs.

Increase in Mental Patients.—A preliminary report by the U. S. Department of Commerce, based on reports from the New Mexico State Hospital, indicates that the number of mental patients under treatment in the hospital has increased at a relatively greater rate than has the population of the state as a whole from 1910 to 1928. There were under treatment, Jan 1, 1910, 66.9 patients per hundred thousand, and on Jan. 1, 1928, 132 patients per hundred thousand of the general population. Of the patients present in the hospital, Jan. 1, 1928, 291 were males and 229, females.

NEW YORK

Society News.—The Fulton Academy of Medicine, Fulton, gave a dinner in August in honor of Dr. Albert L. Hall's entrance on his fiftieth year in the practice of medicine. Dr. Hall is a former president of the academy. Among the speakers were Drs. Sylvester D. Keller, Frank E. Fox and William F. Connors.

Hospital News.—A recent law authorized the transfer to the city of Buffalo of a part of the Buffalo State Hospital, and the state department of taxation and finance has received $350,000, representing compensation by the city of Buffalo for demolishing the Elmwood building of the state hospital.——A campaign will open September 13 to raise $100,000 for improvements to the Emergency Hospital, Buffalo.

Academy Moves to New Home.—The Buffalo Academy of Medicine will celebrate the opening of its new home on Humboldt Parkway near Northampton Street, Buffalo, October 3, when, previous to the dinner, the guests may inspect the building. The academy was established in 1892 by the grouping of the Buffalo Medical and Surgical Association, the clinical society, the obstetric society and the pathologic society, each of which became a section of the academy. Dr. De Lancey Rochester, the first president of the academy, will be the guest of honor at the celebration. Dr. William F. Jacobs is president this year.

Katherine Malinowski — Former Abortionist — Six Months in Workhouse.—Convicted of unlawfully prescribing medicine, Katherine Malinowski, 164 Goodyear Avenue, Buffalo, was sentenced, August 7, to the workhouse for six months and to pay a fine of $500. When "Dr." Malinowski formerly had an office at 1572 Broadway, she was listed as a chiropractor. In 1926, she was convicted by a jury of second degree manslaughter in connection with the death of a woman. Records were presented in court to show that she had performed 146 abortions in 1925. She was then sentenced to not less than five nor more than ten years in prison, but by some procedure was released after serving a few months. She returned to Buffalo, and, according to the Bulletin of the Medical Society of the County of Erie, evidently resumed her favorite occupation.

NORTH CAROLINA

Society News.—It is reported that the health department of Kinston ordered the Edgewood Dairy closed, August 6, following evidence which indicated that the milk was contaminated; the Lenoir County Medical Society approved the action of the health department.——The Alamance-Caswell County Medical Society was addressed, August 14, by Dr. Samuel R. Newman, Danville, Va., on infant feeding.

Octogenarian Takes Postgraduate Course.—Robert H. Jones, a dentist of Winston-Salem, 80 years of age, who has been practicing for fifty-three years, according to *Southern Medicine and Surgery*, is taking a postgraduate course in dentistry offered by the extension division of the University of North Carolina. Dr. Jones is the only surviving charter member of the state dental society which was organized in 1875.

NORTH DAKOTA

Patients in Institution for Feebleminded.—The North Dakota Institution for Feebleminded had a total of fifty-nine first admissions during 1927, as compared with thirty-one in 1922, according to a survey made by the U. S. Department of Commerce in cooperation with the state board of administration. The ratio of first admissions per hundred thousand of the general population was 9.2 in 1927 and 4.8 in 1922. The total number of patients present in the institution, Jan. 1, 1928, was 520, as compared with 145, Jan. 1, 1910, and the ratio of such patients per hundred thousand of general population steadily increased during this period from 25.1 to 81.1. The figures for 1927 and 1928 are preliminary and subject to correction (THE JOURNAL, August 4, p. 329).

PENNSYLVANIA

Chiropractors Ordered to Store Equipment. — Judge Henderson of the Fayette County Court directed four chiropractors, July 17, to refrain from practicing and to remove and store their furniture and equipment until they had been authorized by the state to practice and to pay the costs of the proceedings. They were George Hackney, now of Pittsburgh; Haught of Point Marion; Healy of Connellsville, and Marshall of Brownsville.

Personal.—Dr. John M. Dumm, Mackeyville, was guest of honor at a testimonial dinner given in June by the Clinton County Medical Society. Dr. Dumm is the fifth member of the society who has completed fifty years in the practice of medicine and has been so honored.——Dr. Ellen C. Potter, formerly of Harrisburg, has been appointed superintendent of the New Jersey State Home for Girls.——Dr. Frank C. Parker, Norristown, has been elected president of the Montgomery Hospital staff.

Society News.—Dr. Arthur C. Morgan, Philadelphia, president of the state medical society, addressed the Franklin County Medical Society, Shippensburg, August 21, on public welfare problems in relation to medicine.——Twelve cases of typhoid fever were reported in Trafford, August 10, when the outbreak was considered to be under control.——The Lehigh County Medical Society held its annual outing, August 14, on Lehigh Mountain near Allentown, and the Lycoming County Medical Society held its annual outing at Round Top Inn, August 10, near Halls Station. The guests of honor at the latter outing were four members of the society, each more than seventy-five years of age.

State Medical Meeting at Allentown. — The seventy-eighth annual meeting of the Medical Society of the State of Pennsylvania will be held at Allentown, October 1-4, under the presidency of Dr. Arthur C. Morgan, Philadelphia. The general meetings will be in the high school auditorium. The local chairman on the committee on hotels is Dr. Frederick B. Harding, 941 Hamilton Street, Allentown. The scientific program includes many addresses and demonstrations by Pennsylvania physicians and the following from other states: Drs. William S. Thayer, Baltimore, President of the American Medical Association, who will discuss the paper on problems in diagnosis from the internist's standpoint; George G. Ward, Jr., New York, "Treatment of Pelvic Infections"; Henry A. Christian, Boston, "Myocardial Disturbances Due to Abnormal Thyroid Function"; Roy Wesley Scott, Cleveland, "Clinical and Pathologic Observations on Coronary Disease"; Dallas B. Phemister, Chicago, "Pathology and Treatment of Pyogenic Infections of Joints"; Harry Friedenwald, Baltimore, "Relation Between Ophthalmology and General Medicine"; John MacKenty, New York, "Diagnosis and Treatment of Laryngeal Malignancy with Special Reference to Total Laryngectomy and Use of the Mechanical Larynx"; William Allen Pusey, Chicago, "The Changing Knowledge of Eczema," and John H. Cunningham, Jr., Boston, "Various Features Connected with Tumors of the Bladder."

TEXAS

Personal.—Dr. Charles J. Koerth has been appointed medical director of the Woodmen of the World War Memorial Hospital, San Antonio, to succeed the late Dr. H. Phil Hall.

Another Chiropractic Martyr.—S. T. McMurrian, a chiropractor of Dallas, spent July 12 in jail. He was convicted last January of violating the state medical practice act and carried his case to a higher court, which sustained the original sentence. He is said to be the first ciropractor convicted in Dallas County for violating the medical practice act.

Society News.—Dr. John G. McLaurin has been elected president of the Dallas Academy of Ophthalmology and Otolaryngology for the ensuing year.——The Tarrant County Medical Society held its semiannual clinics recently in the hospital of Fort Worth; among others there was a pellagra clinic, a diabetic clinic and an orthopedic clinic; there was a banquet at the University Club between the afternoon and evening sessions, and among those present were Drs. Felix P. Miller, El Paso, president of the state medical society, John O. McReynolds and Charles M. Rosser, Dallas.——Drs. William D. and James Guy Jones have opened a fireproof twelve bed eye, ear, nose and throat hospital at Hall and Live Oak streets, Dallas.

Oil Royalties Provide Building Fund. — Among the endowments of the University of Texas are 2,080,000 acres of land on part of which there is now being developed an oil pool from which the university receives a royalty. The income from this source already amounts to about $5,000,000, according to the Nashville *Banner*. There is a constitutional provision requiring that funds for additions to the physical plant of the university must come from the university's endowment and not from appropriations made by the legislature. The legislature, however, for 1926-1927, appropriated more than $1,500,000 for the maintenance of the university. During the last five years, the university, which includes the medical school at Galveston, is said to have expended about $1,000,000 for buildings.

VIRGINIA

Personal.—Dr. Blanton P. Seward, Richmond, has accepted a position at the Lewis Gale Hospital, Roanoke.——Dr. George F. Simpson, Purcellville, has been elected a vice president of the Loudoun Hospital at Leesburg.

Society News.—The semiannual meeting of the Southwestern Medical Society will be at Wytheville, September 27-28. There will be a symposium on head injuries and other papers, in addition to those by the invited guests, Drs. Robert H. Ivy, Philadelphia, and William T. Graham, Richmond.

Another Hospital Centennial.—The Western State Hospital, Staunton, celebrated its centennial, July 24; about 200 persons attended the exercises. Among others, Dr. Joseph S. DeJarnette, for many years superintendent, reviewed the history of the hospital.——The sixty-bed Mary Washington Hospital, Fredericksburg, has been opened.

University News.—At the ninetieth commencement of the Medical College of Virginia, May 26-29, ninety-two degrees were conferred in the department of medicine. Dr. Roshier W. Miller, Richmond, was elected president of the alumni association.——Dr. Achille Murat Willis has resigned as professor of surgery at the Medical College of Virginia, Richmond.

GENERAL

Anniversary of Optical Company.—The Bausch and Lomb Optical Company, Rochester, N. Y., is celebrating its seventy-fifth anniversary. The history of the advance of this institution, founded in 1853 by Mr. Bausch following an accident which caused him to return to his trade as an optician, has been like some other industries, a story of early struggle, and then gradual growth and expansion. Mr. Bausch died in 1926, outliving his partner, Mr. Henry Lomb, about eighteen years. The company has been of great service to the advancement of science.

Service as Contract Surgeon Counts. — Congress has passed a bill providing that officers of the medical corps of the army be given credit for purposes of retirement for the time they served as contract surgeons or reserve medical officers prior to their commission in the regular army. Under existing law, medical officers receive no credit whatever in the calculation of the length of their service for the time they spent as contract surgeons. The legislation had the approval of Surgeon General Ireland, who commented on it as follows in a letter to the committee on military affairs of the Senate:

> For purposes of promotion and retirement Congress has already recognized contract service for members of the Dental and Veterinary Corps, for the Medical Corps only as regards longevity pay (act of June 20, 1922). The time seems ripe for the passage of such a measure, as the group of medical officers concerned would begin to reap the benefit of this legislation, if enacted, as early as next year. Most of this service as acting assistant surgeons and contract surgeons was rendered during the Spanish-American War and the Philippine insurrections. One hundred and five medical officers now on the active list had such service prior to being commissioned in the regular corps.
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> We have had contract surgeons in the army from time to time for nearly a century. We employed them extensively during the Civil War. At the outbreak of the Spanish-American War the number of medical officers of the regular army allowed by law was 192. In addition, there were appointed 140 medical officers of the United States Volunteers and 940 contract surgeons, or, as they were then called, "acting assistant surgeons." This number of contract surgeons was reduced to 385 on July 1, 1899, but at that time they still outnumbered the regular corps two to one.
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> A large number of these contract surgeons were on duty with troops in the field, performing the duty of a medical officer. For example, on June 30, 1900, 462 were on service and distributed as follows: 121 in the United States, 22 on transports, 10 in Porto Rico, 60 in Cuba, and 249 in the Philippine Islands.

American Public Health Association Meets in Chicago. —The fifty-seventh annual meeting of the American Public Health Association will be held in Chicago, October 15-19, under the presidency of Dr. Herman N. Bundesen and with headquarters at the Stevens Hotel. There will be forty-two sessions, thirty-one of which will be meetings of sections of the association. Dr. Bundesen will deliver the presidential address at the first general session, Monday evening. The second general session, Wednesday evening, will be addressed by

Dr. Frank G. Bondreau of the League of Nations, Geneva, Switzerland, on "International Health." Special sessions have been arranged for the discussion of cancer, epidemiology, dairy products and training for public health work. There will be joint sessions of the sections and one session devoted to rural health work. A symposium on preschool health supervision will be treated from the standpoint of the small town, the small city and a limited area of the large city. The engineering section will give a symposium on shellfish sanitation, methods of financing water supply and sewerage improvements, and sterilization of milk utensils. This group will also discuss atmospheric pollution by smoke, and the relation of useless noise to public health and ventilation as it is related to absenteeism in schools. The vital statisticians will consider accidents in the home, public accidents and accidents in industry; the section on food, drugs and nutrition, the preparation and uses of evaporated milk and what should be striven for in food advertising. The program includes many other subjects. The speakers include well known public health men. Meeting jointly with the American Public Health Association will be two other national organizations, the American Child Health Association and the American Social Hygiene Association.

Study of Relation of Income and Education.—The chapters of the Alpha Kappa Psi fraternity cooperated in a study of income through a questionnaire presented to bankers, bakers, clerks, merchants, mechanics, actors, physicians, teachers, accountants and clergymen living in all parts of the United States. The object was to learn of any relation that exists between education and income. Individual reports, covering the income of 7,396 individuals for the year 1926, were received; 1,267 reports were from persons whose schooling ended with the elementary grades and of these ninety-seven, or only 6 per cent, reported incomes normally belonging in higher grades. Most of the exceptions in this class were men over 40 years of age who may not have met the keen competition which exists today with men of higher education. While a few persons in this group demonstrated that success is possible with limited education (one of them claimed an income of $61,000 a year), they are not considered fair examples of the boys of today. The median income for this class was highest in the age group 40 to 44, when it averaged $1,700. High school graduates with no higher education sent in 1,772 reports. Their median income was highest between the ages of 45 and 54, when it was $2,800. There were exceptions in this group also, one reporting $34,000. The group of college graduates comprised 557 with an A.B., ninety-seven with a B.S. and 720 with a degree in commerce. Among the bachelors of arts there was not the wide variation that occurs in the groups heretofore noted. The highest A.B. income reported was $25,000. The highest median income of those with A.B. degrees was at the age period 60 to 64, when it was $6,200. Of the 720 college graduates in business administration, the median income was highest in the age group 45 to 49, when it was $11,500. The forty-five with a master's degree and the fifty-two doctors of philosophy probably represent the men who are more interested in education than in business. The highest median income of the A.M. group was between the ages 40 to 44, when it was $4,750; in the Ph.D. group, the highest median income was $5,000 at the same age period. The study is not considered a perfect cross-section of professional incomes, as the number reporting were too few, but they are considered probably typical of the professions. In a group of 141 lawyers the highest median income was $11,000 in the age period 50 to 54. There were incomes among the lawyers as high as $43,000 and as low as $700. Among the fifty-eight doctors of medicine the highest income was $16,000. The median income in this class was highest in the age group 50 to 54, when it was $6,000. There were incomes reported among the physicians as low as $1,750. It is believed that while such factors as health, personality and social relations must be considered, this study is evidence that every addition to formal education is reflected in increased earning power.

FOREIGN

Growth of British Association.—The British Medical Association is in its ninety-sixth year, having been founded at a meeting of fifty medical men at the Worcester General Infirmary, July, 1832, with Sir Charles Hastings in the chair. Its journal was issued for the first time under the title of the *British Medical Journal* in 1857. Membership rose during the period 1866-1912 from 2,462 to 26,568. The rise was especially rapid in the latter year as a result of the professional upheaval that followed the introduction of the national insurance scheme. Many who joined solely on that account resigned soon afterward and the membership declined until 1918, in part as a result of the World War. The ground lost, however, has been far more than regained. The membership now is about 33,600. The primary object of the association, the promotion of the medical and allied sciences, is still being served. That its activities are expanding is further indicated by the fact that the building at Tavistock Square, which has been occupied a comparatively short time, is now being extended. The work of excavation is going rapidly forward. The council has approved the erection of "blocks A and B."

Personal.—The National Tuberculosis Association at its twenty-fourth annual meeting, June 19, Portland, Ore., awarded "in absentia" the Trudeau Medal to Sir Robert W. Philip, Edinburgh, Scotland, for achievement in the development of a plan for the control of tuberculosis in Edinburgh. This is said to be the first time that a resident of a foreign country has received this medal.——Dr. Alexander H. Macklin of Dundee, Scotland, formerly surgeon on the *Endurance* and *Quest* voyages, will accompany an antarctic expedition leaving in September in charge of Comdr. Douglas G. Jeffery, who was a member of Sir Ernest Shackleton's last south pole expedition. The Byrd and Wilkins antarctic expeditions will be en route at about the same time, although they will be on opposite sides of the antarctic continent.——Sir Ronald Ross, London, England, was awarded, June 28, the Harbon gold medal of the Royal Institute of Public Health for 1928 in recognition of his services to the public health.——Pupils and friends of Professor Jeanselme propose to bestow on him a bronze medal, December 9, in the Musée de l'Hôpital Saint Louis, to mark his retirement from the faculty of medicine and from the hospitals. Contributions may be sent to the treasurers of the committee, MM. G. Doin et Cie, 8 place de l'Odéon, Paris, before October 15. Those who contribute at least 100 francs will receive a replica in bronze.——Dr. Clemens Pirquet, Vienna, was nominated, August 29, for the presidency of Austria, and the only other candidate in the November election is Prof. E. Wettstein, a botanist.

Report of International Radiological Congress.—About 1,100 members from more than forty nations participated in the International Radiological Congress at Stockholm, Sweden, in August. The largest delegations were from America, Germany, Russia, Italy, Great Britain, France and the Scandinavian countries. The official delegates from the United States were Drs. Edward H. Skinner, Kansas City, Mo., representing the Section on Radiology of the American Medical Association; George E. Pfahler, Philadelphia, the American Roentgen Ray Society; Edwin C. Ernst, St. Louis, the Radiological Society of North America; B. H. Orndoff, Chicago, the American College of Radiology; Albert Soiland, Los Angeles, the American Radium Society, and William D. McFee, Haverhill, Mass., the American Electrotherapeutic Society. The official opening was attended by the crown prince, who addressed the congress, and other members of the royal family. The scientific sessions were held in the parliament building which had been secured by the local committee for the exclusive use of the congress. Reports indicate that the congress was most successful. Efficient secretaries made the section chairmen's work pleasant. Uniformed pages operated simultaneous announcement boards in the various spacious halls of the parliament building, in each of which were automatic timing devices which served to expedite the program. The setting was so unique that it will be difficult for other nations to surpass it. The commercial exhibits were in a building across the bay from the parliament building; ferries made frequent trips. Handsome roentgen-ray machines from various countries were on display. It was a striking fact in connection with the exhibits that only valve tube rectifiers and motorless transformers were in evidence. The local committee was host at a supper and dance at the Berns Saloner Restaurant, where about 2,000 were entertained until the small hours. The next night an invitational banquet given by Stockholm city officials was held at the city hall. The official banquet of the congress was held on the third evening in the winter garden of the Grand Royal Hotel. There were numerous luncheons, drives and entertainments for the ladies provided by the local women's committee. The congress was held under the presidency of Dr. Forssell, to whom much of the credit for its success is due. Sixty members of the Radiological Society of North America traveled together going over.

Correction—Changes in Faculty at Western Reserve.—In the list of changes in the faculty of Western Reserve University School of Medicine, Cleveland, noted in THE JOURNAL, August 18, p. 506, Dr. Roy W. Scott was said to have resigned as professor of medicine. Dr. Scott resigned as professor of medicine, school of pharmacy, a position which he held in addition to his major position in the school of medicine which is unaffected by his resignation from the school of pharmacy.

Government Services

Changes in Veterans' Bureau Personnel

The following changes are noted in the August *U. S. Veterans' Bureau Medical Bulletin:*

HOSPITALS

Dr. Louis C. Ager, transferred from Cincinnati to Rutland Heights, Mass.
Dr. Erasmus S. Baker, transferred from Fort Bayard, N. M., to Algiers, La.
Dr. Howard W. Barker, reinstated at Bronx, N. Y.
Dr. Julian R. Blackman, resigned at Palo Alto, Calif.
Dr. John R. Brown, reinstated at Fort Snelling, Minn.
Dr. Harry E. Bundy, appointed at Portland, Ore.
Dr. John J. Burke, transferred from Jefferson Barracks, Mo., to Camp Custer, Mich.
Dr. Harry R. Carson, transferred from Perry Point, Md., to Sheridan, Wyo.
Dr. Howard T. Child, resigned, reinstated at Bronx, N. Y.
Dr. John F. Curtin, resigned at Minneapolis.
Dr. William M. Dobson, transferred from Camp Custer, Mich., to Bedford, Mass.
Dr. Bryant B. Edwards, resigned at Fort Bayard, N. M.
Dr. Henry Terrie Floyd, transferred from Washington, D. C., to Oteen, N. C.
Dr. Stevens T. Harris, appointed at Fort Lyon, Colo.
Dr. Harry Hickman, appointed at Edward Hines, Jr., Hospital, Maywood, Ill.
Dr. Smith S. Johnson, resigned at Fort Harrison, Mont.
Dr. Glen D. Kimball, appointed at Lake City, Fla.
Dr. Otho R. Lynch, resigned at Northport, Long Island.
Dr. James E. Maloney, reinstated at Bronx, N. Y.
Dr. Rob R. McCully, transferred from Rutland Heights, Mass., to Cincinnati.
Dr. Samuel B. McFarland, transferred from Fort Bayard, N. M., to Palo Alto, Calif.
Dr. Hugo Mella, appointed at Northport, Long Island.
Dr. George L. Mosby, transferred from Edward Hines, Jr., Hospital to St. Cloud, Minn.
Dr. Vance S. Mullon, appointed at Tuskegee, Ala.
Dr. John Osterhout, resigned at Portland, Ore.
Dr. Frederick C. Robbins, appointed at Perry Point, Md.
Dr. John C. Rogers, resigned at Waukesha, Wis.
Dr. Harry C. Sharp, appointed at Waukesha, Wis.
Dr. John C. Simpson, reinstated at Memphis, Tenn.
Dr. Roscoe W. Smith, resigned at Walla Walla, Wash.
Dr. Jaffray J. Vega, appointed at Edward Hines, Jr., Hospital, Maywood Ill.

REGIONAL OFFICES

Dr. Ernest E. Bishop, resigned at Cincinnati.
Dr. Henry A. Brady, appointed at Cleveland.
Dr. Gilbert G. Cottam, resigned at Sioux Falls, S. D.
Dr. Earl J. Eversole, reinstated at Louisville, Ky.
Dr. Guy V. Forney, transferred from New York to Chicago.
Dr. Claude E. Frazier, appointed at Little Rock, Ark.
Dr. Isadore Green, resigned at Boston.
Dr. Milford A. Leach, appointed at Helena, Mont.
Dr. George V. Lewis, appointed at Little Rock, Ark.
Dr. David W. Register, resigned at Atlanta, Ga.
Dr. Martin J. Seid, resigned at San Francisco.
Dr. Joe Zeiler, resigned at Los Angeles.

Navy Personals

Lieut. Comdrs. Irving W. Jacobs, Clarence J. Brown and Harold E. Ragle have been ordered to duty at the Guardia Nacional, Nicaragua, the naval hospital, New York, and the naval hospital, Mare Island, Calif., respectively; Comdrs. Glenmore F. Clark, Harry A. Garrison, Julian T. Miller and Griffith E. Thomas and Lawrence M. Schmidt to the naval hospital, League Island, Pa., the U. S. S. *Arizona*, the U. S. S. *Utah*, the naval hospital, New York, and marine barracks, Parris Island, S. C., respectively, and Capt. John B. Mears to the naval training station, San Diego, Calif. Lieut. Comdr. Robert T. Canon and Lieut. George C. Thomas have resigned from the service. Lieut. William H. Harrell has been ordered to attend a course of instruction at the New York Post Graduate Medical School and Hospital.

Army Personals

Col. Haywood S. Hansell is relieved from duty at Letterman General Hospital, San Francisco; he will sail, about November 24, for New York, and then proceed to Fort Oglethorpe, Ga., for duty. Major William Denton will be relieved from duty at the fourth corps area laboratory, Fort McPherson, Ga., about Jan. 15, 1929, and will proceed to Hot Springs National Park, Ark., for duty. Major Charles L. Gandy will be relieved from duty at Fort Sam Houston, about October 1, and will proceed to the William Beaumont General Hospital, El Paso, for duty. Major Bascom L. Wilson will be relieved from duty at the general dispensary, Washington, D. C., about October 1, and will proceed to Fort Sam Houston for duty. Major Miner F. Felch will be relieved from duty at Fort Hayes, Ohio, about October 1, and will proceed to Washington for duty in the general dispensary.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Aug. 11, 1928.

Cancer Research

If progress in our knowledge of the cause and cure of cancer is slow, it is not for want of research and ample provision for the means of carrying it on. The International Conference on Cancer, which was organized by the British Empire Cancer Campaign, has just taken place, as already reported. At the annual general meeting of the campaign, an important report was presented. The campaign does not itself carry out research. Its carefully thought out policy from its inception had been to bring together the workers throughout the empire. It presents the overlapping of lines of research, checks all new work by counter research, leaves no information or inquiry unconsidered, and gives financial aid and encouragement to accredited workers whenever the proposed research offers promise of fruit. Experiments are being continued to ascertain the method whereby the natural cure of cancer, which sometimes occurs, is produced, and to discover, if possible, how artificial immunity may be brought about. Some workers claim that the mechanism of tumor immunity has now been demonstrated. A series of experiments has been carried out to try to produce antibodies against cancer within the living tissue, by treating implanted tumors with formaldehyde, and it is claimed that these experiments have been largely successful. In a series of forty tests, disappearance of the tumor was produced in thirty-eight instances, while a large percentage of the tests showed immunity to subsequent tumor inoculation. Other investigators have attempted to find a vaccine or serum capable of immunizing animals against cancer. Much of this work has been carried out in tissue culture. It appears that there is great difficulty in checking these observations by suitable controls, largely because foreign serum (serum from another species of animal) often proves toxic to cancer and normal cells irrespective of any cancer antibodies it may contain. On the subject of lead treatment, the standing committee of the Council of St. Bartholomew's Medical College reports conclusions highly unfavorable. So far no evidence has been obtained that the use of lead by intravenous injection leads to the resorption of neoplastic tissues in man. The average duration of life of the patients treated by lead was less than their expectation had they not been so treated. On the other hand the Birmingham Cancer Committee (as stated in a previous letter, THE JOURNAL, April 21, p. 1303) has been conducting an experimental inquiry into the value of colloidal lead compounds in the treatment of malignant disease, and reports provisionally that of thirty-four patients treated ten derived benefit, and that the method is of distinct therapeutic value and deserves further investigation. The main therapeutic value of lead appears to lie in its ability to restrain metastases or to destroy small and recent deposits.

A Manchester committee on cancer has also presented an important report, which takes the form of a book of post-graduate lectures. The health officer for Manchester concludes that the increase in cancer is proved in most countries, not only in Europe but in the Far East as well. He emphasizes the incidence of cancer from 45 years upward, and the higher rate of prevalence in women due to cancer of the mamma and generative organs, and shows an enormous preponderance of cancer incidence among cotton operatives. Professor Jamieson deals with the lymphatic system. It appears that many cancer cells are killed in the glands but some survive and form secondary tumors. The important point is to regard the spread of a tumor as evenly centrifugal, in consequence of which glands are not likely to be affected by other means than this peripheral

permeation. The permeation theory is an extension of our knowledge, and no operation can be regarded as truly radical unless the tumor, a wide area round it, the lymphatic trunks of the areas, and the lymphatic glands are removed. Professor Burgess deals with cancer of the gastro-intestinal tract and emphasizes the importance of the early symptoms and early diagnosis of cancer. In regard to the great frequency of cancer of the stomach, he does not consider preexistent ulceration as an important factor. Dr. Burrows, superintendent of the Manchester Radium Institute, obtained 10 per cent of apparently permanent cures in what were nearly all inoperable cases. In carcinoma of the cervix, 30 per cent of inoperable cases cleared up, but about 15 per cent recurred subsequently. Professor Donald prefers operation to the use of radium in those cases in which there seems a reasonable chance of total extirpation of the disease, and does not agree with American gynecologists who have largely supplanted operative treatment by the use of radium in the treatment of uterine cancer. In connection with the origin and prevention of mule-spinners' cancer, important experiments have been done. Cancer in mice has been produced with the lubricating oil used in cotton mills. This confirms the view that mule-spinners' cancer can be produced by a mineral oil. Shale oil was found much more liable to produce cancer than a shale-free petroleum oil, while a lubricating oil made from sperm oil was quite harmless. Observations were made also on toxic oils purified by various methods. Samples treated with sulphuric acid were rendered harmless. Research work was done on the cancer-producing qualities of a special form of tar, and tumors appeared in mice in seventeen weeks in 100 per cent of cases. The results of treatment of cancer of the breast by modern surgical methods were investigated. It was found that in the early stages the prospect is very good, more than 80 per cent being alive at the end of ten years after the operation. When the axillary glands were involved the results were three years of life in 50 per cent, five years in 33.3 per cent, and ten years or more in 20 per cent.

Women in Medicine

The protests that have arisen in consequence of the decision of certain London hospitals to return to the prewar practice of excluding women students has been referred to before. As part of the campaign being undertaken by a joint committee of women's organizations (National Union of Societies for Equal Citizenship; Association of Headmistresses; St. Joan's Social and Political Alliance, and Women's Cooperative Guild) to secure for women in the medical and hospital services opportunities equal to those of men, a deputation of women waited on the board of management of King's College Hospital. The main object was to present the need of reversing the decision to close the medical school to women students. Applications for opportunities to submit the case of the women students have been made to all the other London hospitals concerned in the recent decision. Certain of the hospitals have replied that no good purpose would be served by their receiving such a deputation. Many reasons for believing that the demand for women physicians is increasing were put forward—the growth of the population in London, and the new work in the way of child welfare and maternity clinics being taken up by the local authorities, for which women physicians might be thought especially suitable. Evidence as to the approval given by parents to the appointment of women physicians as the health officers of girls' schools was produced, and it was claimed that families were now seeking women physicians as the result of meeting them in relation to school matters. It was argued also that many women physicians will have to be sent to India in order to provide proper medical attention for native women, who, on religious grounds, may not be attended by men. The deputation was satisfied with its reception, though the board of governors could not give it any definite reply. It is hoped that the committee appointed by the University of London to examine the matter will receive a similar deputation. Lady Barrett, the gynecologist and dean of the London School of Medicine for Women, has been inquiring into the truth of a recent statement, made in support of the exclusion of women students, that a large proportion of the women who have qualified for the medical profession within the last ten years cannot find employment. Writing in the London Soroptimist, she states that she has found that the facts are otherwise. She has ascertained that, of 664 medical women who have qualified within the last ten years, more than 76 per cent are doing active medical work, a few retired on marriage, and only about 6 per cent of the whole number are temporarily unemployed. Further, as the result of a questionnaire sent to 1,000 members of the Medical Women's Federation, it was found that about 40 per cent are in general practice, 12 per cent are engaged in hospital or institution work, 15 per cent are in public health work, 14 per cent are specialists, 3 per cent are engaged in research work, and only 9 per cent have retired.

Antimalarial Campaign in India

An advisory campaign in India and Ceylon will be begun in November by Sir Malcolm Watson, the new principal of the malaria control department of the Ross Institute. The aim of the visit will be to interest and advise industrial undertakings in the necessity for research and the value of malaria control in the light of the recent resolutions of the Far Eastern Association of Tropical Medicine Congress. An industrial antimalarial advisory committee is also confirmed. This committee will formulate recommendations for the executive under the guidance of four technical members—Sir Ronald Ross, Sir William Simpson, Sir Aldo Castellani and Sir Malcolm Watson. One of its objects will be to form local subcommittees all over the tropics. In India it was found that malaria was associated with village tanks in the great plains, the rivers of Assam, and the wells in large cities. The Calcutta congress of last year pointed out the need for trained research officers and engineers and permanent works for eliminating the source of mosquito breeding, and the proved saving of enormous sums in industrial undertakings by malaria control. The application of these principles year after year has achieved success in Malaya, and shows how malaria is preventable at an economic cost and without a state service.

PARIS

(From Our Regular Correspondent)

July 25, 1928.

The Rockefeller Gift to the "University City," Paris

Mr. John D. Rockefeller, Jr., has made a gift of $2,000,000 to the "University City." His secretary, Mr. Raymond B. Fosdick, has acquainted Senator Honnorat, the president of that institution, with the terms of the gift in a letter in which it is specified that the money shall be used for the construction of a central building and for the administration of services that will assure a common bond between the various nations represented there. During the first three years following the completion of this building, Mr. Rockefeller will place further sums at the disposal of the institution to facilitate the organization of its functions: $60,000 for the first year, $55,000 for the second year, and $50,000 for the third year. He previously furnished the funds for the restoration of the palace of Louis XIV in Versailles. These examples of American generosity have had a great effect in France, where the prolonged discussions over the regulation of the expenses of the war have awakened some bitterness. Last winter, at Mr. Rockefeller's invitation, M. Honnorat inspected university buildings in the United States similar to the one that is to be built here. He is planning to use the Rockefeller gift to organize besides the central administrative services

a common foyer, with restaurant, libraries, recreation rooms, rooms for physical culture, promenades, athletic grounds, information bureau, lecture halls, and a theater and concert hall. The various dormitories that continue to be erected within the large area known as the University City will furnish complete accommodations for 10,000 students. The creation of a central building in which the students of various nations, segregated in their own special dormitories, can meet together will constitute an important factor in developing a feeling of understanding among the representatives of the younger generation destined to constitute the intellectual élite of the future.

A Proposed Change in Legislation Pertaining to Lepers

Professor Jeanselme has requested the Academy of Medicine to take up with the central government the question of modifying the law pertaining to state officials who contract leprosy during the performance of their duties. At present, five years after leaving the government service is the limit of time within which state employees may demand compensation for diseases or infirmities having their origin during their period of government employment. The same term of five years is the limit within which a claim for an aggravation of a disease already recognized may be set up and a corresponding increase of pension demanded. Leprosy usually remains undiagnosed for a variable period after its onset. It is often from five to ten years before the characteristic lesions appear, together with mutilations and blindness. Under the present conditions, a civil official or a soldier in the colonies who has retired and who discovers more than five years later that he has contracted leprosy has no right to compensation by reason of that fact, and the law would oppose the state allowing him any compensation even though the claim should be recognized as entirely legitimate.

The Discussions on the B C G Vaccine

The B C G vaccine of Calmette and Guérin is beginning to encounter in France more adverse criticism than at the start. Professor Nobécourt has published an article in which he formulates a number of important reservations, and recommends that no definite conclusions be formed until there are more facts on which to base them. M. Lignières, an irreconcilable opponent of Calmette, has presented a new communication in which he declares that some infants are not sensitive to vaccination by the buccal route and that this method does not produce immunity in them. Other infants develop a slight infection from it sufficient to provoke a transient immunity; and others develop a definite and more prolonged immunity. He says it is in this group that one observes a number of incidents arising from the vaccination and thinks it advisable to revise, from this point of view, the statistics already published. On the other hand, as the result of researches by M. Weill-Halle, several clinicians show increasing confidence in vaccination by the subcutaneous route. MM. Spillmann and Parisot of Nancy affirm that one can now accept antituberculosis vaccination as efficacious and harmless, even in adults, provided they do not present a positive skin reaction, but Calmette himself will not endorse their view as yet. He advises awaiting the publication of more comprehensive statistics before forming a definite opinion.

The Removal of the Faculty of Medicine of Lyons Outside the City

The idea of the important reorganization of the Faculté de médecine de Lyon originated with Mr. Vincent, president of the Rockefeller Foundation. The city of Lyons was building a model hospital in the suburbs of Lyons, at Grange Blanche, which consisted of numerous separate pavilions, each of which comprised, in addition to wards for patients, a laboratory and a room for class instruction. Mr. Vincent, visiting the building in process of construction, was struck with its unusually fine location and suggested that the Faculté de médecine itself be located in the center of the group of hospitals. The dean of the faculty, Prof. Jean Lepine, replied that that would require more funds than the city of Lyons could furnish. Mr. Vincent thereupon offered to supply 41,000,000 francs from the funds of the Rockefeller Foundation for the realization of the project, on condition that the remaining 15,000,000 francs be furnished by the government or the city of Lyons. M. Poincaré approved at once an appropriation of 12,000,000 francs and the city of Lyons voted the remaining 3,000,000 francs. The Rockefeller Foundation had previously given 800,000 francs to the Oeuvre franco-américaine de l'enfance and to the Hôpital d'enfants, which are directed by Madame Edmond Gillet. When completed, the new Faculté de médecine, with the hospitals grouped about it, will occupy a considerable area. It will be equipped in the most modern manner, with numerous laboratories, lecture halls, elevators, a machinery hall, and the like. This concentration will greatly facilitate the work of the students, who have heretofore been obliged to work in several hospitals scattered about the city, often great distances apart. They will have, furthermore, the advantage of being in continuous contact with their instructors. Since the new buildings will be situated some distance from the center of the city, dormitories for the students will be created near the Faculté de médecine, constituting a small cité universitaire after the manner of that now being constructed in Paris. The only objection seems to be that some professors will find trouble in looking after their clientele.

The Reorganization of the Paris Hospitals

M. Mourier, director of the Assistance publique in Paris, has presented to the general council of the department of the Seine a plan for the reorganization of the Paris hospitals. Many of these are old and in bad condition, requiring extensive repairs yearly. The old Hôtel-Dieu was entirely rebuilt only forty years ago but is now out of step with modern developments. The Hôpital de la Pitié has been demolished and rebuilt nearby, in modern style. The Hôpital de la Charité, which dates from 1608, and the Hôpital Beaujon, which was built in 1784, will likewise be razed. They occupy ground that has become very valuable, and the proceeds from the sale of the sites will go a long way toward their reerection farther out. The Hôpital Beaujon will be removed to Clichy, a suburb of Paris. Seventy million francs has been appropriated for this purpose, and a further sum of three millions for the creation of a small first-aid hospital to be erected in the same quarter in which the old hospital stood, so as not to deprive the neighborhood entirely of hospital services. The Hôpital de la Charité and the Hôpital Broussais will be demolished, and a new modern hospital costing 27,000,000 francs will be erected in their stead. The essential idea of M. Mourier is gradually to remove the large hospitals to sites outside the city, and to create, within the city, a considerable number of first-aid stations for the accommodation of the urgent cases arising in the various sections of the city. Patients requiring hospitalization will be transported as soon as feasible to the large hospitals. A large sanatorium for women will be established at Labruyère (Oise), corresponding to that at Agincourt, which is reserved for men. It will contain 338 beds and will entail an expenditure of 18,000,000 francs. Another tuberculosis sanatorium will be erected at Champrosay, 26 kilometers distant from Paris; it will have 550 beds and will cost 17,000,000 francs. The Hôpital Claude Bernard in Paris, which is reserved for contagious cases, will be rebuilt and enlarged, on its present site. It will have 500 beds more and will cost 22,500,000 francs. The old St. Louis Hospital, which dates from 1607, the cornerstone of which was laid by King Henry IV, is still in good condition and will be preserved. As the courts are of good size, an antivenereal dispensary and a special pavilion for leprous cases have been added.

BERLIN

(From Our Regular Correspondent)

July 21, 1928.

The German-Russian Syphilis Expedition

The Notgemeinschaft der Deutschen Wissenschaft, in collaboration with the commissariat for public health service (department of venereal disease) in the Union of Soviet Socialistic Republics, and the Russian Academy of Sciences, has organized a medical expedition to Asiatic Russia. About a year and a half ago, Professor Wilmanns of Heidelberg and Professor Stühmer of Münster spent some time in the Buryat-Mongol Republic [north of Mongolia and west of Lake Baikal, Siberia (capital, Irkutsk)], in order to determine whether a large expedition would find opportunities for successful work. Kulskoie, which lies east of Lake Baikal and has a good-sized hospital, was selected as temporary headquarters. The apparatus required for the investigations was lent to the expedition by the Notgemeinschaft. The Russian organization committee agreed to provide complete accommodations for the German representatives and to make their journey as comfortable as possible. The necessary buildings were erected; the local hospital was enlarged and rearranged in keeping with the needs of the expedition. Four German collaborators left Berlin in April in order to get everything in readiness before the arrival of the expedition. The German members of the expedition left recently and were to join the Russian members at Moscow. The aims of this German-Russian Syphilis Expedition may be outlined as follows: In Europe, the nature and the course of syphilitic infections are influenced by the type of medical treatment that prevails and by the collective factors that are grouped together under the term "civilization factors." It is maintained that syphilis has taken on a different character in the older civilized countries. It is therefore of the greatest importance from the standpoints of therapeutics and environment to study in large groups of patients who have received little or no treatment while living under relatively primitive conditions the pathologic manifestations of acquired and congenital syphilis in the skin, the internal organs, and elsewhere, and to compare the results with the present observations made in Europe. That is the proposed task of the expedition, the accomplishment of which will require the combined efforts of syphilologists, internists, neurologists and serologists. The German scientists taking part in the expedition are: Prof. Max Jessner, syphilologist and chief physician of the University Dermatologic Clinic in Breslau, whom the Notgemeinschaft der Deutschen Wissenschaft chose as leader of the expedition; Dr. Bernard Patzig, internist and roentgenologist and formerly assistant physician in the Medizinische Klinik, Heidelberg, and director of the roentgenologic department of the municipal hospital, Wiesbaden, and now assistant physician at the Emperor William Institute for Brain Research; Dr. Beringer, neurologist and psychiatrist and assistant physician at the Universitäts-Nervenklinik, Heidelberg, and Dr. A. Klopstock, serologist and assistant physician at the Institute for Cancer Research in Heidelberg. Dr. Klemm of the Institute for Brain Research, Berlin, will accompany the expedition as interpreter and with a view to carrying on entomologic researches. Madame Dr. Klopstock, Madame Dr. Patzig and Miss Weichenhan will serve as assistants in the clinical, roentgenologic and serologic departments (the first mentioned, also as physician). Mr. Neff of the Siemenswerke, Berlin, will serve as expert machinist and keep all apparatus in working order. The Russian scientists taking part in the expedition are: N. L. Rossianski, director of the public health service (department of venereal disease), head of the expedition; J. G. Sachs, assistant physician of the State Venereologic Institute; S. M. Grzebin, professor at the University of Smolensk and formerly head assistant at the State Venereologic Institute; S. M. Fried, assistant physician of the S. V. I.; S. M. Jaskolko, assistant physician of the S. V. I.; R. S. Braude, scientific collaborator of the S. V. I.; J. M. Okun of the S. V. I. in Moscow. Prof. Dr. Bronner, director of the S. V. I. in Moscow, will accompany the expedition part of the way.

Pithecanthropus Erectus

It created a great sensation, thirty-six years ago, when the Dutch military physician Dr. Dubois excavated on the island of Java the remains of a creature that represents a species occupying an intermediate position between man and ape. Dubois had given up his instructorship in anatomy in Amsterdam and had gone as a military physician to the Sunda Isles to look for the "missing link" between man and ape, the existence of which was assumed by Ernst Häckel on theoretical grounds. The find gave rise to much critical discussion, based, however, not on the actual remains but on photographs of them. Dr. Weinert has now examined, in collaboration with Dubois in Haarlem, the original specimens. He reported the results of his researches at the recent session of the Berlin Anthropologic Society. Weinert had previously discovered that the skull of *Pithecanthropus* has two frontal sinuses, which are lacking in the gibbon and the orang-utan but occur in the chimpanzee and gorilla, as well as in man. That settles the controversy as to whether *Pithecanthropus* is descended from the gibbon. The frontal sinuses of *Pithecanthropus* are larger than in man. As for the relation between the inner and the outer length of the skull, *Pithecanthropus* is found to occupy a midway position between the gorilla and the chimpanzee, on the one hand, and the Neanderthal man and *Homo sapiens*, on the other hand. The forehead resembles closely that of man. The calvaria of the skull indicates, Weinert estimates, a brain capacity of about 1,000 cc., whereas the capacity of the gorilla cranium is only 500 cc. In many respects the skull resembles that of man; in many other respects that of the ape. The sutures on the inside of the skull, as in man, are more coalesced than on the outside. Whether the skull should be classified as belonging to the Neanderthal race appears doubtful to Weinert. At any rate, the skull-cap of *Pithecanthropus* is the most primitive human skull-cap ever found; it is just what one would expect in the "missing link." In addition, two molar teeth were found that correspond to the skull-cap. The femur that was found, a year later, 15 feet from where the skull-cap was discovered, resembles more closely the present human type than do the femurs of the Neanderthal man. Two years ago, it was reported that a second skull of *Pithecanthropus* had been found in Java, near the site of the first find, but careful examination revealed that it was the head of the humerus of an elephant.

Vital Statistics of Prussia for the Third Quarter, 1927

The Prussian Bureau of Statistics has just published the statistics on the marriages, births and deaths for the third quarter of 1927. The report contains some remarkable demographic data, especially with reference to Berlin. The increase in the number of marriages, which has been noted for some time, is still in evidence. There were 8.09 marriages per thousand of population, as compared with 7.28 for the corresponding quarter of 1926; in 1913 the record was only 6.58. The highest figure was recorded in Berlin: 9.72 per thousand, as against 8.85 in the third quarter of 1926 and 7.97 for the third quarter of 1913. Not so far behind Berlin come the Rhine Province, with 8.93 per thousand, and Westphalia with 8.65. Over against this favorable result, however, stand the low birth rates, and for the third quarter of 1927 there was even an excess of deaths over births. There were 10,800 children born in Berlin, which is equal to 10.37 per thousand of population, as compared with 11.11 for the previous year and 19.60 for 1913. But, in contrast with 1913, the number of deaths declined from 11.71 to 10.52. As a result of the marked decline in the birth rate, however, the former excess of births over deaths, which in 1913 was 7.87 for Old Berlin, dropped in

1926 to 0.79, and in the third quarter of 1927 changed to an excess of deaths over births represented by the absolute figure 155, or 0.15 per thousand of population. The result for Berlin would be still more unfavorable if the infant mortality had not declined markedly; namely, from 13.8 in 1913 to 7.1 in 1927.

TURKEY

(From Our Regular Correspondent)

July 28, 1928.

The Law Pertaining to "Patent Medicines"

May 21, a bill pertaining to "patent medicines" and pharmaceutic compounds was accepted by the great national assembly. It was sponsored by the ministers of hygiene, justice and finance, and became a law largely as a result of their efforts. It defines "patent medicines" and pharmaceutic compounds as those proprietary products, not included in the codex, which are sold under their trade names and are so used by the medical profession. Some of them require prescriptions; while others, such as toothpastes and powders, do not require prescriptions. It does not include the following substances as "patent medicines": serums, vaccines, and microbic emulsions; biologic extracts; tonics and therapeutic soaps, and nonpoisonous hair dyes and tonics, tooth pastes and cosmetics. The manufacture of biologic products will be controlled by the government, however, and will require a license.

Under its other provisions a permit will be necessary for the selling of "patent medicines" and chemicals manufactured in Turkey as well as for those imported. Permits for the manufacture of "patent medicines" will be issued only to physicians, chemists, pharmacists and dentists after proper scientific manufacturing conditions, approved by the government, have been complied with. Laboratories manufacturing poisonous and toxic specialties will be required to employ a pharmacist or a chemist as a responsible director. To obtain a manufacturer's permit, application must be made to the ministry of hygiene and must be accompanied by five samples of the product, its dosage and exact formula, a sample package with label and directions for use, and its wholesale price. The ministry of hygiene will then investigate the applicant and his manufactured product as to composition, price and possible injuriousness and determine whether it is to be sold by prescription or free. If the product is approved, a note concerning it will then be published in the official bulletin, and a license, bearing the results of the investigation, will be issued. The applicant will bear the cost of investigation and also pay a special fee for the license permitting its manufacture.

A license for the sale of a foreign "patent medicine" will be issued only to an established agent or a licensed pharmacy or druggist. Application for such a license must be accompanied by the formula of the medicine, which has been verified by the local Turkish consulate. It must also be stated whether the medicine is sold on prescription or free in the country where it is manufactured, and five samples must be furnished for analysis. If it is approved, the ministry of hygiene will have it listed and allow it to pass through the custom-house. The official bulletin will then announce that it has been accepted. Each application will be passed on within two months from the date of its arrival at the ministry. The manufacturer of a "patent medicine" in Turkey will be held responsible for its purity and for its future conformity to its original formula as approved by the ministry of hygiene. Likewise, the local agent will be held responsible for any "patent medicine" imported into Turkey. The ministry of hygiene will have the authority to analyze from time to time any compound or "patent medicine" that it deems necessary. In case a manufacturer wishes to make a change in formula, form of medicine or packing, change in directions for use, name of medicine, or any other change, the change must be approved by the ministry of hygiene. The label, as well as the directions for use, will bear in a conspicuous place the full name and address and license number of the manufacturer. In case the medicine contains any poison, this will be so stated and a conspicuous sign of warning will be used. The fact that the medicine is to be sold only on prescription will also be stated. It will be unlawful to commend a "patent medicine" or attribute to it any quality or faculty it does not possess. That it is used for the treatment of certain diseases is permissible on the directions for use, and in other advertisements, but this must first be approved by the ministry of hygiene. The ministry will permit the importation of "patent medicines," compounds or biologic materials used for scientific investigations which are being successfully employed in other countries and which are of known reputation. The cost of any analysis will be 25 Turkish pounds and must be paid in advance, while the cost of licensure, equal in amount, is not to be paid until the license is issued. A consumption tax will be levied on all medicines of home or foreign manufacture. If a specialty proves by analysis to be impure or not to conform with the formula originally approved by the ministry of hygiene, the specialty will be confiscated, the case will go to court, and a penalty from 50 to 500 Turkish pounds will be exacted. Any manufacturer selling a specialty for which a license has not been issued will be fined from 50 to 200 Turkish pounds, and any person found unlawfully manufacturing "patent medicine" will be fined from 200 to 500 pounds, while any person found selling a foreign specialty without a license will be fined from 200 to 500 pounds and will be imprisoned for defrauding the customs.

Intestinal Parasites in Turkey

Owing to a lack of proper water supply and sewage disposal, the most common intestinal parasite in Turkey is *Ascaris lumbricoides*. It is found in practically all patients, especially children, that come to the dispensaries. In order to determine the most common parasite, Dr. Ismail Hakki Bey, professor of parasitology in the School of Medicine of Constantinople, examined 800 stools, half of which were from persons living in Constantinople, and half from persons living in the provinces. Adults, and children from 10 to 15 years of age, were used in this study, and most of them were in a healthy condition. The other common intestinal parasites were also found, two of which, *Oxyuris vermicularis* and *Tricocephalus trichiura*, were almost as frequent as *Ascaris lumbricoides*.

The Personnel and Budgets of Health Departments

In order to obtain better cooperation in the local and municipal health departments, the appointments and changes in their medical personnel are now made by the ministry of hygiene. The budgets of these organizations must comply with the regulations prescribed by the ministry, and are now subject to its approval and consequent ratification by the great national assembly. At present, it controls the appointment of 293 pharmacists, 1,036 sanitary inspectors, 347 midwives, 168 nurses, and 1,059 physicians, 589 of which are paid out of national government funds, 184 out of local funds and 286 out of municipal funds.

Marriages

CLARENCE W. TREXLER, Kealia, Kauai, Hawaii, to Miss Eva Rose Cuneo of San Francisco, June 27.

EMMANUEL BERTRAND WOOLFAN to Miss Priscilla Bonner, both of Los Angeles, September 1.

GORDON MACKAY MORRISON, Boston, to Miss Alice Blodgett of Framingham, August 4.

GUSTAF ARTHUR LARSON, Fargo, N. D., to Miss Helen Engebretson, August 16.

JAMES W. SMITH to Miss Sarah Pollack, both of New York, August 28.

Deaths

Charles Alfred Lee Reed ✠ Cincinnati, well known for many years as a conspicuous figure in American medicine, died suddenly at his summer home at Gloucester, Mass., August 28, of angina pectoris. Dr. Reed was born at Wolflake, Ind., July 9, 1856. He received his early education in public and private schools in Glendale, Ohio, and his medical education in the Cincinnati College of Medicine and Surgery, from which he received his M.D. degree in 1874. Taking up the practice of medicine in Cincinnati, he became associated early with teaching and organizational activities. He was largely instrumental in the organization of the Medical College of the University of Cincinnati. As director of the university from 1891 to 1903, he took the initiative in merging the then existing medical colleges of the city into the present medical school. He was professor of gynecology and abdominal surgery in the college from 1882 to 1896, professor of clinical gynecology from 1902 to 1917, and since that time professor emeritus.

In the American Medical Association, Dr. Reed was constantly active. He was elected a trustee in May, 1896, and served for two terms of three years each. In 1900 he became President of the American Medical Association. He was a member of the House of Delegates in 1902, 1903, 1904 and 1907, and took a conspicuous part in the reorganizational activities of 1901. From 1890 to 1891 he was chairman of the Section on Obstetrics and Diseases of Women.

In 1908, Dr. Reed was a candidate for the position of United States senator. The multiplicity of his activities is revealed by the fact that he was secretary-general of the first Pan-American Medical Congress, held in Washington in 1893, president of the American Association of Obstetricians and Gynecologists in 1898, member of the American Gynecological Society and the Southern Surgical Association, a fellow of the British Gynecologic Society and the American College of Surgeons, and a member of the special United States commission to Panama in 1905. In connection with the last mentioned appointment he was a strong supporter of the work of General Gorgas and of the Yellow Fever Commission. He served also as president of the Seventh Pan-American Medical Congress, in 1915.

CHARLES ALFRED LEE REED, M.D., 1856-1928

Dr. Reed was made a chevalier of the Legion of Honor of France in 1908. In 1917 he suffered a hemorrhage of the brain but thereafter recovered. Previous to that time Dr. Reed had contributed largely to medical periodical literature, and had also been the author of several books, including a Textbook on Gynecology, 1900; Diseases of Women, 1913; Marriage and Genetics, 1913, and Diseases of the Stomach and Intestines, 1913. In 1919 he published a book entitled "Chronic Convulsive Toxemia," reflecting his views on epilepsy, which aroused much interest but which failed of substantiation. More recently Dr. Reed had given up medical practice and had devoted himself entirely to his lecturing and to the conduct of a health column published in about one hundred newspapers. To the end, however, he kept in intimate contact with all public health problems, voicing particularly his opposition to prohibition and his belief in medical science as the most important of all human knowledge. Some of his views were also reflected in a novel entitled "The First Estate," published in 1927. In his death there passes one of the most interesting and dynamic figures in the history of American medicine.

Wallace Dickinson Rose ✠ Little Rock, Ark.; University of Arkansas School of Medicine, Little Rock, 1916; at one time associate professor of medicine at his alma mater; served during the World War; formerly on the staffs of the Little Rock General, St. Vincent's and Baptist hospitals; author of "Textbook on Physicial Diagnosis"; aged 41; was drowned, August 17, in the Cache River, near Brasfield, while trying to rescue his daughter.

George Arthur Webster, Brattleboro, Vt.; Harvard University Medical School, Boston, 1889; at one time instructor of otology, Tufts College Medical School, Boston; formerly on the staffs of the Massachusetts Charitable Eye and Ear Infirmary, and the Carney, St. Elizabeth's and Boston Floating hospitals, Boston; aged 63; died, July 31.

Wendell Thomas Garretson ✠ Detroit; State University of Iowa College of Medicine, Iowa City, 1913; L.R.C.P., Edinburg, L.R.C.S., Edinburgh, and L.R.F.P.S., Glasgow, 1917; surgeon in charge of the division of otorhinolaryngology and ophthalmology, Henry Ford Hospital; aged 42; died, August 17, of coronary occlusion.

Edward A. Holmes, Downsville, N. Y.; Medical Department of the University of the City of New York, 1890; member of the Medical Society of the State of New York; aged 63; died, August 5, at the home of his son in Middletown, of thrombosis, following an operation for varicose veins.

Charles Jay Kirshman ✠ Muncie, Ind.; Indiana University School of Medicine, Indianapolis, 1919; formerly secretary of the Delaware-Blackford Counties Medical Society; on the staff of the Muncie Home Hospital; aged 36; was killed, August 12, in an automobile accident.

Julian Ruffin Beckwith, Petersburg, Va.; University of Virginia Department of Medicine, Charlottesville, 1899; member of the Medical Society of Virginia; on the staff of the Petersburg Hospital; aged 55; died, July 28, of chronic nephritis and arteriosclerosis.

William Seibert Gibson, Washington, D. C.; Medical Department of Columbian University, Washington, 1891; chief clerk of the Bureau of Medicine and Surgery, Navy Department; aged 69; died, August 19, at the U. S. Naval Hospital, of heart disease.

Robert Page Stark ✠ Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1910; served during the World War; formerly county and city health officer of Allegan; aged 54; died, August 14, at the University Hospital, of acute nephritis.

Harley Wilbert Taylor ✠ Rochester, Ind.; Medical College of Indiana, Indianapolis, 1905; served during the World War; president of school board of Rochester; aged 50; died, August 16, of cerebral edema and arteriosclerosis with hypertension.

Thomas Munsey Harper ✠ Milan, Tenn.; University of Tennessee College of Medicine, Memphis, 1891; served during the World War; aged 60; died, August 11, at the Baptist Hospital, Memphis, of pneumonia, following an operation.

Samuel Rush Loving, Centaur Station, Mo.; Kentucky School of Medicine, Louisville, 1875; member of the Missouri State Medical Association; aged 75; died, January 19, at the Deaconess Hospital, St. Louis, of carcinoma of the liver.

Fred David Jackey, Chicago; Denver and Gross College of Medicine, Medical Department, University of Denver, 1907; past president of the Clark County (Wis.) Medical Society; aged 59; died, June 14, of cerebral thrombosis.

Carson Ross Justice, Poland, Ohio; Western Reserve University School of Medicine, Cleveland, 1878; member of the Ohio State Medical Association; aged 76; was found dead in his room, August 17, of heart disease.

Linnie C. Haynes, Macksville, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, Kansas City, 1902; member of the Kansas Medical Society; aged 52; died, April 22, of uremia.

William Charles Kelley ✠ Morgantown, W. Va.; Medical Department of the University of the City of New York, 1882; treasurer of the Monongalia County Medical Society; aged 73; died, August 4, of heart disease.

Samuel Bailey ✠ Mount Ayr, Iowa; Rush Medical College, Chicago, 1879; secretary of the Ringgold County Medical Society; for many years county coroner; aged 76; died, August 17, of pneumonia.

Frank J. Fuller ✠ Potsdam, N. Y.; University of Pennsylvania School of Medicine, Philadelphia, 1895; on the staff of the Potsdam Hospital; aged 62; died, August 4, of acute appendicitis.

William E. Mealing, North Augusta, S. C.; Hospital College of Medicine, Medical Department Central University of Kentucky, Louisville, 1882; aged 69; died, August 11, of heart disease.

Henry H. Rhoads, Vernon, Texas; University of Nashville (Tenn.) Medical Department, 1881; bank president; for many years county health officer; aged 80; died, March 9, of angina pectoris.

Hugh Glenn Johnson, Ault, Colo.; American Medical University, Kansas City, Mo., 1927; aged 35; died, July 24, as the result of an overdose of morphine taken in a cough syrup.

Dan Morgan Smith, Ocala, Fla.; University of Virginia Department of Medicine, Charlottesville, 1871; aged 78; died, April 27, at Jacksonville, of chronic nephritis and myocarditis.

Mary Anna Kimball McDade, New York; University of Michigan Medical School, Ann Arbor, 1892; aged 60; died, May 1, at Moorhead, Iowa, of carcinoma of the stomach.

William Henry Donaldson ✠ Fairfield, Conn.; Medical Department of the University of the City of New York, 1881; aged 69; died, August 13, of cerebral hemorrhage.

Lee R. Veech, Louisville, Ky.; University of Louisville School of Medicine, 1893; aged 64; died, August 1, at SS. Mary and Elizabeth Hospital, of bronchopneumonia.

Charles Edward Spahr ✠ York, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1885; aged 66; died, August 17, of a self-inflicted bullet wound.

Ashbel Henry Morse, Babcock, Wis.; Rush Medical College, Chicago, 1878; aged 81; died, August 5, in a hospital at Wisconsin Rapids, of cerebral hemorrhage.

Robert William Rodman, Lyndhurst, N. J.; Illinois Medical College, Chicago, 1902; aged 48; died, August 4, at Allendale, of chronic nephritis and myocarditis.

Stephen Fisher ✠ New Salem, N. D.; Milwaukee (Wis.) Medical College, 1903; aged 54; died, June 25, at Carson, of a self-inflicted incision of the radial artery.

Thomas R. Allen, Justin, Texas; St. Louis College of Physicians and Surgeons, 1891; Confederate veteran; aged 81; died, April 3, of chronic nephritis.

Karl S. Hummeland ✠ Maywood, Ill.; Jenner Medical College, Chicago, 1908; aged 66; died, August 14, at the Oak Park (Ill.) Hospital, of heart disease.

Andrew Nagy, Palo Alto, Calif.; College of Physicians and Surgeons of San Francisco, 1919; aged 42; died, June 23, of tuberculosis of the spine.

Joseph Theodore Speck, Chicago; Rush Medical College, Chicago, 1897; aged 58; died, March 12, of myocarditis and cerebral hemorrhage.

Hugh Boyle O'Donnell, Philadelphia; Jefferson Medical College of Philadelphia, 1893; aged 60; died, August 14, of heart disease.

James Saunders York, Rayville, La.; Memphis (Tenn.) Hospital Medical College, 1888; aged 58; died, July 26, of heart disease.

Frank P. Letherman, Outville, Ohio; Starling Medical College, Columbus, 1891; aged 63; died, August 18, of heart disease.

Fred Harrison Glasco, Alto Pass, Ill.; Loyola University School of Medicine, Chicago, 1917; aged 39; died, July 17.

Bureau of Investigation

THE VIT-O-NET AGAIN

The Exploiters Institute a "Health Service"

In this department of THE JOURNAL of the issue of March 10, 1928, an article was published on the "Vit-O-Net Electro-Magnetic Blanket" and its method of exploitation. The Vit-O-Net is a large size electric heating pad; it sells for about $100. The reason for again discussing the device is that an attempt is being made to lead the public and the medical profession to believe that the objectionable methods of exploitation, dealt with in THE JOURNAL'S previous article, have been abandoned. Further, the public is being told that every purchaser of a Vit-O-Net will be entitled to medical service for himself and all members of his family as long as he owns one of the blankets, and that this "Health Division is under direction of a physician, an M.D., who also is a Master of Arts and a Fellow of the American Medical Association."

Let it be said at the outset, as was said in the previous article: the Vit-O-Net is a convenient, if expensive, means of applying heat. This, however, is all that it is. The claims that it has magnetotherapeutic or electrotherapeutic virtues are pure buncombe. The following quotations from letters received within the past two or three months will indicate the present trend. This from a physician in Keysville, Va.:

"I am desirous of obtaining information in regard to the Vit-O-Net Corporation of Chicago. We have been informed, here, that the so-called Vit-O-Net has been accepted by the A. M. A. recently. The representative tells me that Dr. F. Bache Van Nuys, Chicago, is prominently connected with the company, and that Dr. Van Nuys is one of the leading internal medicine men of Chicago."

This from Fort Wayne, Ind.:

"A patient of mine, who has a very severe disabling and rapidly progressive case of arthritis deformans, was called on recently by an agent for the Vit-O-Net. He was quite a slick article and assured my patient that the Vit-O-Net would absolutely cure her. Without my knowledge or permission, although I was, and am, the attending physician on the case, he took a complete history and requested a urine specimen—both to be sent in to a Dr. Van Nuys in Chicago, who would pass on the value of the Vit-O-Net in this particular case."

This from Rochester, Minn.:

"Can you give me any information regarding the 'Vit-O-Net'? They claim that it is a cure for rheumatism and various other diseases, and they make the statement that every purchaser of Vit-O-Net is entitled to medical service for himself and all members of his family, as long as he owns a Vit-O-Net, with no charge. They also state that their health division is under the direction of a physician, an M.D. who, also, is a Master of Arts and a Fellow of the American Medical Association."

From New London, Conn.:

"Recently I was approached by a salesman who tried to persuade me to aid him in selling his apparatus to the family of a little boy with chronic infectious arthritis. He represented the Vit-O-Net Corporation, Chicago. He claimed that your unfavorable comment in THE JOURNAL had been reversed by further investigation and cited Dr. Van Nuys as favoring it.'"

These and many similar inquiries that have come to the office of THE JOURNAL make plain the fact that the Vit-O-Net Corporation has enlisted the aid of Dr. F. Bache Van Nuys, in an endeavor to obtain the recognition of the medical profession for the electrical heating pad known as the Vit-O-Net. The previous article on the Vit-O-Net, as has already been stated, appeared March 10. On May 7 the American Medical Association received a letter from Dr. Van Nuys, stating that he had been asked by the president of the Vit-O-Net Corporation to come into that organization and build up a "Health Division." Dr. Van Nuys said, further, that his investigation had led him to believe that the Vit-O-Net organization had a "very undesirable business history" and that he had found "that it had been headed by one Craddick—a pseudo-doctor-scientist."

In passing, it should be said that William F. Craddick was vice president of the Vit-O-Net Corporation at the time that THE JOURNAL'S article appeared. Further, it seems that Craddick and one Charles E. Muhlig were the inventors of this heating pad, on which they obtained a patent in 1923 and assigned it to the Vit-O-Net Manufacturing Company of Chicago. Dr. Van Nuys, in his letter, further stated that one of the things he demanded when he took over the health depart-

ment of the Vit-O-Net concern "was that W. F. Craddick . . . must be eliminated, completely and absolutely, from any connection with my department. . . . The man, Craddick, would not do to tie to."

Dr. Van Nuys also submitted copies of material that he was sending out from the "Health Division" of the Vit-O-Net concern. One of these pieces of literature was entitled, "Interpretation of Blood Examination." In this, Dr. Van Nuys, while not frankly repeating the preposterous claim that has been made (that the iron in the blood can be magnetized) mentions the fact that the blood contains "an iron-bearing protein," and states further that the "Vit-O-Net is the greatest scientific discovery in physiotherapy and perhaps the only method of supplying to the body the Force needed in restoration of health and its maintenance." This, according to Dr. Van Nuys, "is accomplished via the iron-bearing protein content of the blood."

Another piece of material submitted was a copy of "Bulletin No. 13," which, apparently, goes to the Vit-O-Net agents. This

Department of Health Service

VIT-O-NET CORPORATION

2615-19 North Ashland Avenue, Chicago

LABORATORY FEE BILL

Containers for sending specimens supplied free.

For complete examination of urine	$ .35
For Differential Blood Count	.35
For Wasserman and Kahn blood test	1.00
For Wasserman spinal fluid	1.00
For examination of sputum	.35
For analysis of Mother's milk	.35
For examination feces	1.00
For examination of smear from tonsils or gums	.35
Interpretation of X Ray Pictures	Free
Analysis of Case Records and Health advice	Free
Dietary sheets and advice	Free

In so much as these fees are purely nominal and only made to keep our Service from abuse and to cover actual postage and package costs we can not carry accounts—the book keeping would cost us more than the fees. Remittances must accompany specimens. Stamps accepted.

F. Bache Van Nuys, M. D.
Director Laboratory

Martha Wennerstrom
Technician

HO-Form C

notified the agents that the company had secured the services of Dr. Franklin Bache Van Nuys, who not only holds the degrees of A.M. and M.D., but has also done "postgraduate work in Berlin, London, Edinburgh, Vienna and New York." It went on to state that Dr. Van Nuys is "engaged in general practice in Chicago and enjoys one of the largest services on the Northwest Side, specializing in diet and diagnosis." Further, the doctor would have associated with him a "Graduate Technician—Miss Martha Wennerstrom." According to the same bulletin, Miss Wennerstrom is "a technician in one of the exclusive hospitals of Chicago."

By far the most interesting material sent to THE JOURNAL office, however, was "Bulletin No. 22," emanating from Dr. F. Bache Van Nuys, Director of the Health Division of the Vit-O-Net Corporation. The following quotations from this bulletin will allow one to visualize Dr. Van Nuys' opinion of the profession to which he belongs and also to evaluate the doctor's knowledge of physical therapy:

"The mental attitude of Doctors is today, and has been from the beginning of time, to look askance at any new developments. Doctors are very prone to condemn, yes damn, anything they know little about. Ask the average Doctor what he thinks of hydrotherapy (use of water); of the Quartz Light, or of Diathermy, and he will probable say it is of little or no value — to use the vernacular — that it don't amount to a damn."

"The earth is surrounded with atmosphere, and, likewise surrounded with an unseen envelope of whatever this mysterious FORCE is—call it 'magnetism' if you like. Without fear of successful contradiction, this FORCE is the sustainer of life, of health, and I can prove that fact scientifically."

"I fully believe, as do many competent investigators, that the human body is an electrical machine, with the BRAIN as the positive pole, the LIVER the negative pole, the NERVES the connecting wires, and the CELL a perfect battery. Now, VIT-O-NET builds up, restores and charges the battery, and gives to the CELL the power or force or food needed, that it may function physiologically."

Dr. Van Nuys suggestions in salesmanship are interesting:

"Incidentally, in your talk to prospects, I think it is a good plan to occasionally use the word 'TOXIC' when referring to bodily poisons. The average layman rather enjoys hearing a word whose meaning is beyond his comprehension—so shoot this word across once in awhile.

But the most remarkable statement in this bulletin was that made by Dr. Van Nuys regarding William F. Craddick, the man denounced in his letter to the American Medical Association as the "pseudo-doctor-scientist." Here is Dr. Van Nuys' estimate of Craddick—and of the medical profession—as given the Vit-O-Net agents:

"In this field of Physio-Therapy our Vit-O-Net is one of the newer discoveries. Had its inventor given it to the medical profession without any remuneration, it would have been accepted immediately, and WILLIAM F. CRADDICK would have been placed in the Hall of Fame and a monument erected to his memory as one of our greatest scientists. WILLIAM F. CRADDICK, however, decided to place at the command of the public his marvelous invention, and today many thousands bless his name with untold thousands more to be his debtors."

The same bulletin urges the Vit-O-Net agents to explain to prospective purchasers that, if they buy a Vit-O-Net blanket, they will get a free "health service," with laboratory tests at the following nominal charges:

Complete chemical and microscopic urinalysis, 35 cents.
Differential blood counts, 35 cents.
Wassermann and Kahn blood test, $1.
Wassermann spinal fluid test, $1.
Sputum examination, 35 cents.
Analysis of mother's milk, 35 cents.
Examination of feces, $1.
Examination of smear from tonsils or gums, 35 cents.

Lastly, there were submitted pages of the "Vit-O-Net Treatment Chart." Under this chart, the following conditions were listed and instructions given how to use the Vit-O-Net to treat the condition:

Anemias	Eclampsia	Neuralgias
Asthma	Fatigue	Neuritis
Bronchitis	Flatulence	Palpitation
Bright's Disease	Gastritis	Paralysis
Cancer	Goiter	Palsy
Catarrh	Gout	Parkinson's
Colitis	Hay Fever	Peritonitis
Constipation	Indigestion	Pleurisy
Consumption	Influenza	Pneumonia
Convulsions	Jaundice	Psoriasis
Corpulence	Liver Diseases	Rheumatism
Croup	Locomotor Ataxia	Skin Diseases
Cystitis	Lumbago	Tuberculosis
Diabetes	Malaria	Uremia
Dropsy	Mastoiditis	Varicose Veins
Dyspepsia	Nervous Diseases	Vertigo

More recently, there has been issued an elaborate illustrated booklet of twenty-four pages and cover, in which practically all of the fantastic claims previously made for Vit-O-Net are repeated. There is the statement that "Vit-O-Net vibrates the cells"; there is the further claim that "the soothing effects" of "ribbons of magnetic force streaming uninterruptedly through the entire body" are produced by the Vit-O-Net. There is a picture of steel filings standing on end, due to the magnetic force of a solenoid brought close to the filings, and the statement is made: "Here is what happens to every cell in the body when you take a Vit-O-Net Bath." We are told that "Social Leaders use Vit-O-Net to keep their magnetic attractiveness," that "Beauty Shops give Vit-O-Net treatments . . . for reducing superfluous flesh." In the same booklet there are pages of testimonials telling of the marvelous cures that have been brought about by Vit-O-Net in pathologic conditions ranging through the alphabet from anemia to uremia. There is a picture of "F. Bache Van Nuys, A.M., M.D., Fellow of the American Medical Association, making personal reply to your

inquiry, after diagnosing condition from case records sent his office." There is a picture of "Miss Martha Wennerstrom, Laboratory Technician," doing her stuff with the usual array of test tubes, bottles, microscope, etc.

Summed up, then, the exploitation of the Vit-O-Net today differs but little from its exploitation previous to the appearance of THE JOURNAL'S first article on the subject. The main difference seems to be that, in the place of the reports of alleged doctors who were not doctors at all, and the publication of an article by a chiropractor who was connected with a "diploma mill," the company now has a man who is legally entitled to write "M.D." after his name and call himself a Fellow of the American Medical Association. The exploitation of the Vit-O-Net today is just as unscientific as it was before the concern employed "F. Bache Van Nuys, A.M., M.D., Fellow of the American Medical Association." Furthermore, the attempt that is being made to lead the public and the medical profession to believe that the American Medical Association approves, or condones, the Vit-O-Net claims and selling methods is as unwarranted as it is dishonest.

[EDITORIAL NOTE.—On September 4, 1928, after the above article had gone to the printer, THE JOURNAL received a brief note, dated August 31, from Dr. Van Nuys, reading:

"I today resigned from the position of Health Director of the Vit-O-Net Corporation, forcing an immediate acceptance. From this date I am in no manner responsible for anything that may emanate from that organization nor are they to in any manner use anything containing my name. I am resuming private work."]

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

SENSITIVITY TO ANTITOXIN NOT POSSIBLE AFTER ANTIRABIC VACCINATION

To the Editor:—Please comment briefly on the use of antitoxin serum, given with or shortly after first dose of antirabic vaccine. Please omit name.

M.D., Iowa.

ANSWER.—While it is not stated what kind of antitoxic serum the correspondent has in mind, there is no reason why any antitoxic serum that might be indicated should not be given at the same time or shortly after the first dose of antirabic vaccine. There is no chance that antirabic vaccine could sensitize the person injected with respect to the antitoxic serums in use, because the vaccine is derived from the spinal cord of rabbits while the antitoxic serums are obtained from horses.

AVERTIN AS AN ANESTHETIC

To the Editor:—Can you give me any information relative to the use of Avertin as an anesthetic? What is Avertin? Please omit my name.

M.D., Chicago.

ANSWER.—Avertin (also referred to as E. 107) is apparently tribrom-ethyl alcohol. In a recent report by Hans Killian, published in the *British Journal of Anesthesia* (**6**:48 [July] 1928), the author says: "Avertin is in the first place a useful sleep-producer and sedative. If one desires to go beyond this and attain full narcosis, then one demands of the molecule more than it is able to perform without injuring the human organism. The ever present harmful effect on the circulatory apparatus with narcotic doses causes a heightened shock-readiness, a state in which the human organism is not always able to bear another shock such as that caused by operation-trauma, especially in the case of laparotomy.

"Thus may be explained the occasional catastrophe. To introduce into the organism a molecule with properties so decidedly injurious to the vital centers in a single dose without knowledge of individual rapidity of absorption is dangerous, and the molecule is less to blame for it than the actual procedure of the narcosis. For more than thirty years rectal narcosis has been tried again and again, and has always been given up because, in opposition to inhalation-narcosis it is not possible either to decide on the precise dose or to interrupt the narcosis when once produced.

"That the process of divided doses lessens the danger, I consider probable; that it fully sets it aside, I consider improbable. Furthermore, the recent blood pressure tests of E. 107 contradict the principle of divided doses. The majority of the complications occurred in the first thirty minutes. The fact that the absorbing surface of the intestinal mucous membrane always varies, that it is unknown beforehand, and that the osmotic faculty is also unknown, throws a dark shadow on the whole method.

"An anesthetic must guarantee the greatest possible measure of safety. In this respect, avertin rectal narcosis cannot in the least compare with other anesthetics. So one can only agree conscientiously with the use of E. 107 as a sleep producer, and a sedative, but must observe the greatest care when using it as an anesthetic because too high doses are necessary for this purpose."

POSSIBLE COPPER POISONING FROM COPPER WIRE

To the Editor:—Is it possible to develop copper poisoning with gastro-intestinal symptoms by handling copper wire in the winding and drawing of it? Will the winding and drawing of wire produce a dermatitis? Will fine pieces of copper wire embedded on the hands or any place in the body produce any symptoms outside of those caused by the accompanying infection? Is there any book published either on occupational diseases or on toxicology that gives in detail any of this information?

KARL C. EBERLY, M.D., Fort Wayne, Ind.

ANSWER.—For a time beyond mind, a fair portion of the laity have harbored two diametrically opposite notions about dangers from copper. One of these may be noted in terms of the oft heard statement, "Don't pick a sore with anything that contains copper, such as a brass pin, else poisoning will set in." The second may be observed in the common practice of treating wounds by covering with a penny and then superimposing a slice of bacon. It is probably true that neither of these is of great significance.

It is granted that the copper ion is toxic, as may be noted in the action of the astringent or caustic copper salts. No less, industrial copper poisonings are far fewer than the claims growing out of alleged copper poisoning. A more reasonable explanation of the abnormal state may be found, in many instances, in the substances used with the copper; such as zinc in brass; varnishes, as are at times applied to copper to retain the luster, and oils that may be used in machining copper containing objects. Lead and arsenic are the true blamable agents for many cases erroneously attributed to copper.

When, however, all these extraneous sources are fully investigated and ruled out as probable causes, there remain a few cases of copper poisoning. These are in addition to the skin lesions mechanically produced by copper dusts, and the state of sweating green, which condition may arise without evidence of further injury from the copper.

In the case of copper winding and drawing, if there are copper dusts or basic copper carbonate dusts (such a salt being formed when air and moisture come in contact with copper) there are reasons to believe that gastro-intestinal symptoms may arise. This is attributed to the astringent action of the copper. Hyperacidity and urticaria have been observed. This condition constitutes a mild disability only.

A true dermatitis wholly produced by copper, as found in the process of winding and drawing, is questionable. If mechanically the skin is abraded, as by metal particles, or if conditions akin to "prickly heat" exist, it is possible for the copper dusts, or basic copper carbonate, which is quickly formed, to aggravate and increase the severity.

Embedded portions of copper may lead to the greenish discoloration of flesh in the immediate vicinity. This is due to a combination between the copper and some constituent of the tissue. Local necrosis may be increased thereby, but there is no reason to attribute to this event any dire possibilities.

One case is on record in which copper was embedded in the patient's leg for twelve years without observable deleterious effects. In another instance copper splinters were retained in the eye without harm for one year, when an iridocyclitis developed. Whether or not this was due to the copper or merely to the presence of foreign bodies is not established. Soluble copper proteinates are practically nontoxic when administered subcutaneously. Amino-acids, peptones and lipoids bind copper in their molecules. Metallic copper is very slowly soluble in flesh. The extent of oxidation determines the degree of solubility. Powdered copper, when introduced into the blood stream of animals, is essentially benign so far as harm traceable to copper per se is concerned. In the presence of many enzymes, copper albumin compounds are broken down, freeing the copper.

This discussion, however, does not include the use of copper compounds in foods, such as for artificial coloration of peas

and beans; fortunately, in this country such practice is of no moment since the Food and Drugs Act proscribes it.

Toxicologic textbooks do not contain precise and full data of the detailed type here requested. "Industrial Health," by Kober and Hayhurst, and "Industrial Poisons in the United States," by Alice Hamilton, supply much informative material on copper poisoning.

DIAGNOSIS AND TREATMENT OF MORNING DROP

To the Editor:—A man, aged 34, married, a father, appeared for care regarding morning drop present over two years. There was no history of gonorrhea. Microscopic examination showed some cells and some bacteria of indefinite origin or kind. The latter cleared up under a few irrigations and prostatic massage, but the drop continued. The prostate was enlarged for the patient's age. Treatment consisted of massage, instillation of silver nitrate, 2 per cent, and mercurochrome, 2 per cent, and irrigations of potassium permanganate beginning 1: 5,000 and decreasing to 1: 1,000, for a period of four months, save a let up for a few days in between, when santal oil was given. The drop ceased for only one week and when 1: 1,000 potassium permanganate was given strangury occurred, which lasted five or six days. The drop still appears. What treatment shall I give? There are no strictures; sounds pass readily up to American number 20. Please omit name.

M.D., Kansas.

ANSWER.—The syndrome reported indicates a chronic inflammation of the crypts located in the floor of the urethra. For an exact diagnosis, urethroscopic examination is indispensable. Infiltrations of a lesser degree as a rule yield to repeated massage over a large metallic sound introduced into the anterior urethra. These manipulations are followed by the instillation of some astringent solution. If, however, the outlets of these crypts present themselves in the urethroscopic field of view as little gaping holes surrounded by a rigid edge, permanent relief can be furnished only by obliterating these crypts with an electric spark or with a fine galvanocautery. Either application is done with the aid of an operative urethroscope.

CHLOASMA AFTER PREGNANCY

To the Editor:—Two women developed chloasma spots during pregnancy, and the condition has been gradually becoming worse since delivery, about one year in each case. Can you tell me anything that will remove this blemish? Please omit name.

M.D., Idaho.

ANSWER.—There seems to be no safe way of treating chloasma gravidarum. The usual ointments and lotions advocated for this condition contain ingredients that are injurious. Such bland substances as buttermilk, lemon juice and hydrogen peroxide may be tried, but the results are usually not satisfactory. It is best to tell the women frankly that little can be done for their affliction.

TREATMENT OF FURUNCULOSIS

To the Editor:—I have a patient who is suffering with furuncles which appear on almost any part of the body. I have tried eliminating different foods which might be the cause. Autogenous vaccine was the only treatment of any value, the patient being free of furuncles for six months. The urine and blood sugar are normal. Can you suggest any other line of treatment? Is Stannoxyl of any value? Shall I repeat vaccine treatment? The patient also has anal pruritus and diarrheal stools. He is under the care of a specialist whose basic treatment is acidophilus milk therapy. Is there some basic etiology of the three conditions? Please omit name.

M.D., New York.

ANSWER.—The patient's resistance to micro-organisms is evidently poor, and this may also account for the other symptoms. There would be no objection to the repetition of a course of vaccine therapy. The value of Stannoxyl is not established. The cause of the diarrhea and possibly also of the lessened resistance to infection might be found in an achlorhydria or in intestinal conditions which might be revealed by a test meal, gastro-intestinal roentgen-ray study and stool examination.

TREATMENT OF UNDULANT FEVER DUE TO B. ABORTUS

To the Editor:—Is there any treatment that is really efficient for undulant fever due to *Bacillus abortus?* From what I can gather from the literature, mercurochrome 220-soluble intravenously seems to have been used somewhat, with rather doubtful results and very severe reactions. I have a probable case in a boy, aged 11 years, and wish to give him the benefit of the latest treatment but do not wish to use mercurochrome or anything of like nature, unless it is definitely indicated. Please omit my name.

M.D., Massachusetts.

ANSWER.—The present status of the treatment of undulant or malta fever may perhaps best be compared to that of typhoid. As with typhoid, this disease can be prevented by the subcutaneous injection of killed cultures of the specific micro-organism. Antiserum has been disappointing. It is worth while, in protracted cases with low fever, to attempt shortening the duration of the disease by employing sensitized vaccine to stimulate the defensive powers of the system, best used when the temperature is falling and during the interval of apyrexia. An initial dose of 10,000,000 is given and gradually increased at intervals of four or five days to 50,000,000 and even 100,000,000.

The value, if any, of intravenous injections of mercurochrome or of collargol is probably dependent on nonspecific immunity reactions rather than on antiseptic activity as such. Otherwise the treatment is symptomatic.

DIPHTHERIA MORTALITY

To the Editor:—In the Berlin Letter (THE JOURNAL, July 21, p. 188), the mortality from malignant diphtheria is given as from 8 to 22 per hundred. Is not this rate unnecessarily high for a city with the medical back-ground of Berlin? Are we in line for an extension of the epidemic? Is it not due to the lack of resistance of the individual in the environment rather than to any sort of filth? It would appear that the authorities are lax regarding prevention to have any such a situation in these modern times.

F. J. WALTER, M.D., La Mesa, Calif.

ANSWER.—The figures of diphtheria case fatality in Berlin hospitals (from 8 to 22 per hundred) cited by our correspondent are not very different from those obtaining in many cities in this country. In Chicago the case fatality in 1925, according to the report of the department of health, was slightly over 8; in 1918 it was over 12. Hospital case fatality is likely to be higher than the case fatality in the community at large owing to the fact that hospitals are burdened with a relatively high proportion of patients who have not received an early and adequate dosage of diphtheria antitoxin.

The excessive prevalence of malignant diphtheria which was apparent in several European cities in 1926-1927 has also been noted in this country. The Detroit epidemic of 1926 is still fresh in the minds of health officers, and it is well known that a number of other cities have recently experienced an increase in cases of malignant diphtheria (Diphtheria Mortality in the Large Cities of the United States for 1926 and 1927, THE JOURNAL, April 30, 1927, p. 1396; May 19, 1928, p. 1621). Judged by standards of recent years, the proportion of malignant cases is still high in many localities. It is impossible to predict what will happen in the immediate future.

The relation of diphtheria mortality to the environment is a vital question and has been made the theme of a lively discussion by several writers in recent issues of the *Deutsche medizinische Wochenschrift* (1928, p. 171, 192, 385, 443). From the results of the Schick test, as well known, the proportion of persons having in their blood diphtheria antibodies is largest in the more crowded or "poorer" quarters of modern cities. This probably corresponds with a greater morbidity from clinical diphtheria and consequently a higher death rate. The extent to which individual susceptibility is a factor is unknown.

There is no unanimity of opinion as to the cause of the rather widespread increase of malignant diphtheria since 1925.

POSSIBLE ALLERGY FROM PEAS

To the Editor:—Is there any evidence to show that peas cause allergic phenomena? I do not refer to any condition produced by the ingestion of peas but to a condition produced by a pollen or emanation product. I have been studying the case of a woman who has had three typical asthmatic attacks, and always after sorting or picking peas. The eating of peas does not cause her any trouble. These are the only times she has noted any disturbances of this kind. Please advise as to possible etiology.

DOUGLAS B. BELL, M.D., Moscow, Idaho.

ANSWER.—The nasal mucous membrane and the mucous membrane of the bronchial tubes may become sensitive to various kinds of dust to which they are exposed. The dusts to which a worker is exposed while handling plants often cause symptoms of "hay-fever" or asthma or both. This dust may come from the root, stem, leaf, pod, fruit or flower. Skin tests should be made with extracts of the parts of the plant suspected. If these are positive, the patient should avoid contact with the plant. If there are no reactions, a search should be made for other sources of dust, such as animal hair or dandruff, orris root, or the pollen of grasses or weeds. Attacks caused by exposure to dampness or cold temperature must not be overlooked.

ROENTGEN-RAY TREATMENT FOR PROSTATIC HYPERTROPHY

To the Editor:—The answer given in THE JOURNAL, July 28 to Dr. Eisirson's question concerning the efficacy of roentgen-ray treatment in benign hypertrophy of the prostate can hardly be called a fair statement of the case. Roentgen-ray and radium treatment have both been shown to have distinctly favorable results in a fair proportion of cases. There is no question that surgical excision of the gland is often necessary, but proper radiotherapy sometimes makes the operation unnecessary.

A. U. DESJARDINS, M.D., Rochester, Minn.

Medical Education, Registration and Hospital Service

COMING EXAMINATIONS

AMERICAN BOARD FOR OPHTHALMOLOGY: St. Louis, Oct. 15. Sec., Dr. William H. Wilder, 122 So. Michigan Ave., Chicago.

AMERICAN BOARD FOR OTOLARYNGOLOGY: New York, Oct. 11 and St. Louis, Oct. 15. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Neb.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 908 Forum Bldg., Sacramento, Calif.

COLORADO: Denver, Oct. 2, 1928. Sec., Dr. Philip Work, 324 Metropolitan Bldg., Denver, Colo.

CONNECTICUT—Healing Arts (Basic Science): New Haven, Oct. 13. Address—State Board of Healing Arts, Box 1895, Yale Station, New Haven, Conn.

GEORGIA: Atlanta, Oct. 9-10. Sec., Dr. B. T. Wise, Americus, Ga.

IDAHO: Boise, Oct. 2, 1928. Commissioner of Law Enforcement, Hon. F. E. Lukens, Boise, Idaho.

ILLINOIS: Chicago, Oct. 2-4, 1928. Supt. of Registration, Mr. V. C. Michels, Dept. of Regis. and Edu., Springfield, Ill.

KANSAS: Topeka, Oct. 9. Sec., Dr. Albert S. Ross, Sabetha, Kan.

MICHIGAN: Lansing, Oct. 9-11. Sec., Dr. Guy L. Connor, 707-708 Stroh Bldg., Detroit, Mich.

MINNESOTA — Basic Science: Minneapolis, Oct. 2, 1928. Sec., Dr. E. T. Bell, 110 Anatomy Bldg., U. of Minn., Minneapolis, Minn.

MINNESOTA—REGULAR: Minneapolis, Oct. 16-18. Sec., Dr. A. E. Comstock, 524 Lowry Medical Arts Bldg., St. Paul, Minn.

MONTANA: Helena, Oct. 2-4, 1928. Sec., Dr. S. A. Cooney, Power Block, Helena, Mont.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts 1 and 2, at all class A schools, Sept. 12-14. Exec. Sec., Mr. E. S. Elwood, N. E. Cor. 15th and Locust Sts., Philadelphia.

NEW HAMPSHIRE: Concord, Sept. 13-14. Sec., Dr. Charles Duncan, Concord, N. H.

NEW JERSEY: Trenton, Oct. 16. Sec., Dr. Charles B. Kelley, 30 West State St., Trenton, N. J.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. W. T. Joyner, Roswell, New Mex.

NEW YORK: New York, Albany, Syracuse and Buffalo, Sept. 17-20. Chief of State Department of Education, Mr. H. J. Hamilton, Educational Bldg., Albany, N. Y.

OKLAHOMA: Oklahoma City, Sept. 11-12. Sec., Dr. J. M. Byrum, Shawnee, Okla.

RHODE ISLAND: Providence, Oct. 4-5. Sec., Dr. B. U. Richards, State House, Providence, R. I.

WISCONSIN: Basic Science Board, Madison, Sept. 15. Sec., Prof. R. N. Bauer, 3410 Wisconsin Ave., Milwaukee.

Virginia June Examination

Dr. J. W. Preston, secretary of the Virginia State Board of Medical Examiners, reports the written examination held at Richmond, June 19-22, 1928. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. There were 98 candidates examined and all passed. Ten physicians were licensed by reciprocity and 5 by endorsement of credentials. The following colleges were represented:

College	PASSED	Year Grad.	Per Cent
Howard University School of Medicine	(1926) 80,	(1927)	80
Johns Hopkins University School of Medicine		(1928)	88
Harvard University Medical School		(1928)	82
University of Pennsylvania School of Medicine		(1926)	91.5
Meharry Medical College		(1928)	81
Medical College of Virginia		(1927)	85,
(1928) 76, 78, 78, 78.5, 79, 79, 80, 80, 80, 81, 81, 81, 81, 82, 82, 83, 83, 83, 83, 83, 83, 83, 83, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 84, 85, 85, 85, 85, 85, 86, 86, 86, 86, 86, 86, 87, 87, 87, 87, 87, 87.5, 88, 88, 88, 88, 88, 89, 89, 90, 90, 91, 91, 92			
University of Virginia Department of Medicine		(1927)	81,
(1928) 76, 83, 84, 84, 85, 85, 86, 87, 88, 88, 88, 88, 88, 89, 89, 89, 90, 91, 92, 94			
McGill University Faculty of Medicine		(1928)	85
Osteopaths		(1927)	87

College	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Georgetown University School of Medicine		(1922)	Dist. Colum.
Howard University School of Medicine		(1918)	Dist. Colum.
Emory University School of Medicine		(1927)	N. Carolina
Johns Hopkins University School of Medicine		(1923)	Maryland
Harvard University Medical School		(1918)	New York
University of Pittsburgh School of Medicine		(1927)	N. Carolina
University of Tennessee College of Medicine		(1900)	W. Virginia
University of Virginia Department of Medicine		(1910)	Maryland
University of Munich, Germany		(1925)	New York
Osteopaths		(1911)	Ohio

College	ENDORSEMENT OF CREDENTIALS	Year Grad.	Endorsement with
Hospital College of Medicine		(1883)	U. S. Army
University of Pennsylvania School of Medicine		(1924)	U. S. Navy
University of Tennessee College of Medicine		(1914)	U. S. Navy
University of Virginia Department of Med.	(1924),	(1926)	N. B. M. Ex.

Book Notices

MENTAL HOSPITALS AND THE PUBLIC: The Need for Closer Cooperation. By Lt.-Colonel J. R. Lord, C.B.E., M.D., F.R.C.P. In the Aid of the Work of the National Council for Mental Hygiene. Paper. Price, 1/6 net. Pp. 33. London: Adlard & Son, Ltd., 1927.

The mental hygiene movement has grown to large proportions in the past few years and popular views of the meaning of mental disease have changed greatly. In this small pamphlet, the author traces the origin of the special hospital for mental diseases and the divergence from the general hospital with the object mainly of emphasizing the need of their reunion. With this in view he outlines the attitude of the general public and of the press toward mental hospitals and urges the necessity for a better understanding and a real interest. In this it is essential that the general physician take an intelligent part and this pamphlet can be recommended as giving an excellent summary of the facts; many of the illustrations are taken from American hospitals.

GYNECOLOGY. By William P. Graves, A.B., M.D., F.A.C.S., Professor of Gynecology at Harvard Medical School. Fourth edition. Cloth. Price, $10.50 net. Pp. 1016, with 562 illustrations. Philadelphia: W. B. Saunders Company, 1928.

Graves' revised textbook reveals, once more, the untiring energy and painstaking work of this author. The revision is thorough and excellent. This edition presents many changes. Genital physiology is offered in a more attractive manner. The subject of endocrinology has been revised and improved. A chapter on endometriosis has been added. The subject of cancer of the uterus is discussed vigorously and well. Special methods of treatment of cervical cancer are discussed quite comprehensively. Subjects of especial interest include a revised discussion of the subject of sterility. Newly presented material includes diathermy and the sedimentation test. Illustrations are numerous and good. Many are by the author. One possible adverse criticism might be offered: the book is perhaps too lengthy and too comprehensive for ideal use as an undergraduate students' textbook.

SEMIOLOGIE OCULAIRE. Statique et dynamique oculaires. Par Félix Terrien, professeur de clinique ophthalmologique à la Faculté de médecine de Paris. Paper. Price, 40 francs. Pp. 224, with 100 illustrations. Paris: Masson & Cie, 1928.

This is the fourth and last of the same series by Terrien. It deals with normal and abnormal position of the eyes, both latent and manifest. The first chapter is given over to a fair description of the anatomy of the extrinsic ocular musculature, illustrated by numerous plates of unknown origin and questionable value. Normal equilibrium of the eyes is sketched in the second chapter. Latent strabismus or heterophoria is covered in the thirty-three pages of the next chapter, and the presentation is far from clear or useful; for the undergraduate could not understand it and the graduate ophthalmologist knows more about it than is contained in these pages. Manifest strabismus is next dealt with and is an improvement over the latent form. A good deal of personal experience is included in this chapter, which adds much to its value. But the surgical treatment is dismissed with a scant three pages. Muscular paralyses are considered in the next thirty pages, which treatment is about as useful as laying an antiaircraft barrage with water pistols. Then comes twenty pages of nystagmus, fairly well done and understandable. But nowhere is mention made of Ohm of Bottrop, and nystagmus without Ohm is like Brillat-Savarin's dinner without cheese, which he compared to a beauty with only one eye. The seventh chapter is given over to exophthalmos and enophthalmos and constitutes the best part of the whole book but contains nothing essentially new. A more or less chauvinistic attitude is still manifest when the father of ophthalmology is referred to as "de Graefe," which is comparable to a recent German reference to the American ophthalmic dean as "von Schweinitz." The book-making is good except for the ire-arousing paper binding and the somewhat blurred anatomic illustrations. But the book as a whole is a sad wind-up to an otherwise excellent series and can never make for itself a niche in ophthalmic literature.

STAMMERING. A Psychoanalytic Interpretation. By Isador H. Coriat, M.D. Nervous and Mental Disease Monograph Series No. 47. Boards. Price, $2. Pp. 68. Washington, D. C.: Nervous and Mental Disease Publishing Company, 1928.

Since the vocal apparatus is regularly capable of normal physiologic action in stammerers, and since, in spite of this normality, the stammerer experiences a peripheral inability to produce speech without hesitation, the author is compelled to seek an explanation of the disorder by the discovery of a psychoneurotic abnormality that must by its very nature manifest itself in a disturbance of the peripheral speech mechanism. Stammering then, he theorizes, is "a conflict between the ego instincts and the sexual instincts," being a form of anxiety neurosis or anxiety hysteria with the added mental tic of speech mechanism. To the "pleasure principle," resulting from "an arrest of development" at the "early sexual stage of nursing," is added "the resistance to protect the ego from being overwhelmed by the more powerful tendencies of the oral gratification." The author proceeds with psychoanalytic method to attempt to harmonize the symptomatic manifestations of stammering with this theory, to interpret the mental characteristics of the stammerer from this theoretical point of view, to record his psychoanalytic experience with stammerers, and, accepting the theory as true, to lay down psychoanalytic principles of treatment. The author has written with earnestness and sincerity, and his book is destined to add new psychologic knowledge to this obscure problem; but he seems always to be dominated by his imagination and involved in the vagueness and insecurity of the grounds on which his theme progresses. The book is written with the admitted and everywhere evident purpose to sustain a preconceived theory. This *a priori* mental attitude accounts for unproved assertions of fact and for artificial and strained interpretation of the symptoms of stammering and inferences drawn from them. The assumed bases of the struggles of the stammerer seem not to harmonize with a common sense knowledge of the disorder, viewed from other standpoints. New knowledge concerning the at present poorly understood complex action of the peripheral speech mechanism might later upset completely such a theory. And yet, in order to cover etiologically all possibilities, and to delve as deeply as possible into the psychology of the disorder, the effort had to be made and is worth the making. But research into the etiology of the disorder is destined to continue strongly in other directions.

THE GLANDS REGULATING PERSONALITY. A Study of the Glands of Internal Secretion in Relation to the Types of Human Nature. By Louis Berman, M.D., Associate in Biological Chemistry, Columbia University. Second edition. Cloth. Price, $3.50. Pp. 341, New York: Macmillan Company, 1928.

This is an entertaining if not instructive volume. The second edition retains all of the vagaries of the first, with some additions. The central theme of the book is that the life of every individual in every stage is "dominated" by his glands of internal secretion. One of these glands possesses the controlling influence of the others in the physiology of the individual and so becomes the central gland of his life or "personality." Thus we have "thyroid centered," "pituitary centered," "adrenal centered," and "gonad centered" individuals. This "gland centering" may be due either to hyperactivity or to hypo-activity of the particular gland in question.

After laying down these principles, Dr. Berman attempts to verify them on the basis of contemporary medicine, on the basis of the daily press, and on the basis of ancient history. The author tells us that he has read or consulted more than 20,000 books, monographs and scientific reports in preparation of the volume. The critical acumen displayed by the author in these literary excursions may be exemplified by the fact that on two occasions, at least, he takes newspaper stories of a tragedy or a crime as evidence for his theories. The book contains many things that are true, but the speculations, the unfounded or extremely doubtful generalizations are so skilfully interwoven with the facts that the lay reader, for whom the book is presumably written, is unable to draw the line between facts and fiction.

Dr. Berman lays great stress on the rôle of the suprarenal medulla or epinephrine in health and disease. "The vacillating frame of mind in adrenal centered individuals is the effect of insufficient secretion of the adrenal glands. . . . A good number of observations conspire for the idea that a certain number of neurasthenics are suffering from insufficiency of the adrenal gland. The chronic state of the acute phenomenon known as the nervous breakdown really represents in them a breakdown of the reserves of the adrenals, and an elimination of their factor of safety. In the light of that conception, the great American disease—dementia Americana—is seen to be adrenal disease—the American life the adrenal life, often making too great demands upon that life, and so breaking it down. . . ."

"It will become more and more possible, it is now effectively possible to control these [female] sex traits. By means of these internal secretions one may in fact cause the index of femininity to rise and fall, as the mercury rises and falls in the barometer. . . . Now that the internal secretions of the ovary have become available in chemical form, we have at hand the means for postponing *indefinitely* the dread event [the menopause]."

Certain passages in the book compel one's admiration of the author's sucessful buffoonery. Other passages seem to be almost directly borrowed from venders of pluriglandular products. And yet other chapters seem as serious as Joseph Smith's book of Mormons and "Science and Health" by Mary Baker Eddy. Naturally a considerable portion of such book is devoted to sex, although Dr. Berman pokes fun at the freudians. But the critical reader is in serious doubt whether Berman's paragraphs on "sexual aura," "salacious rabbits," "twittering endocrines," etc., are any more profound in fact and theory than is freudism. The present volume adds somewhat to the gaiety but little to the sanity of the times.

HANDBUCH DER PATHOGENEN MIKROORGANISMEN. Herausgegeben von W. Kolle, R. Krause, und P. Uhlenhuth. Lieferung 17. Band IV. Streptokokeninfektionen. Von Prof. Dr. W. v. Lingelsheim.—Scharlach. Von Dr. Cl. W. Jungeblut.—Pneumokokken. Von Prof. Dr. F. Neufeld, und Dr. R. Schnitzer.—Tetanus. Von Prof. Dr. M. Eisler. Third edition. Paper. Price, 24 marks. Pp. 789-1092, with 27 illustrations. Jena: Gustav Fischer, 1928.

This issue of the third edition of the monumental German Handbuch contains four articles. The one on streptococcus by Lingelsheim, who wrote the corresponding article for the second edition, is well organized and represents, in the main, prevailing opinions. In view of the importance of septic sore throat in some parts of the world, the treatment of this infection seems somewhat inadequate. The second article deals with the special streptococcus infection of scarlet fever and is written by Jungeblut, whose name is not especially connected with the subject but who has given a readable and generally judicial account of the recent investigations. The article on pneumococcus by Neufeld and Schnitzer (this section in the second edition was by Neufeld and Händel) is a masterly outline of a subject in which investigation has been particularly active since the second edition appeared. The important American work on the pneumococcus is fully and clearly summarized. The fourth article on tetanus, by Eisler, is not greatly changed from the treatment of this subject in the second edition.

HOW TO START IN GENERAL PRACTICE: Being Practical Advice for the Newly Qualified. By Isaac G. Briggs, M.R.C.S., L.R.C.P. Cloth. Price, 6/-net. Pp. 158. London: John Murray, 1928.

The reviewing of this book was undertaken as a chore, with the expectation that it would be found to contain the usual lot of banal advice and preaching. It turned out to be quite the opposite. It is a well written, instructive book, full of practical detailed information about what the young physician needs, and intelligent practical advice for him. The author states that the book was written for the man who starts with a stout heart and a lean purse. That is a good object, but any one beginning practice, regardless of the conditions under which he expects to practice, could read the book with profit. It is concerned with practice in England and therefore many of the details do not apply to us, but the general problems considered are the same and it would be exceedingly suggestive for beginners in practice in the United States. The book is also full of interest in the way in which it shows how practice is carried out in England. It is a thoroughly commendable book and we believe the author has done a useful service in writing it.

HANDBUCH DER INNEREN SEKRETION. Eine umfassende Darstellung der Anatomie, Physiologie und Pathologie der endokrinen Drüsen. Herausgegeben von Max Hirsch. Lieferung 5. Band III. Paper. Price, 18 marks. Pp. 1285-1488, with illustrations. Leipzig: Curt Kabitzsch, 1928.

Volume III of this ambitious work deals with clinical pathology and therapy of the endocrine glands. Section 5 of Volume III contains a chapter by Dr. Leicher on the changes in structure and functions of the ear, the nose, the throat and the larynx as related to changes in endocrine function; a chapter by Dr. Hirschfeld on the relation of the endocrine glands to diseases of the blood, and a final chapter by Drs. Delbanco and Bungold on the relation of the endocrine glands to the skin. On the whole the chapters are exhaustive, critical and well illustrated; but because of the three general headings of anatomy, physiology and pathology of diseases of the endocrine glands there is a great deal of repetition, overlapping and therefore dilution of this otherwise useful and superior publication, resulting also in increased price.

CREATINE AND CREATININE. By Andrew Hunter, M.A., M.B., F.R.S., Professor of Biochemistry in the University of Toronto. Boards. Price, $5. Pp. 281. New York: Longmans, Green & Company, Ltd., 1928.

In this excellent monograph the author has successfully carried out his plan, as indicated in the preface, to give a complete account of the chemistry and distribution in nature of creatine and creatinine and to try to evaluate fairly the present views as to the physiologic significance of these two substances. In the first chapter the history involved in the discovery and elucidation of the constitution of creatine and creatinine is thoroughly covered. Next the organic chemistry is covered in considerable detail and numerous derivatives are described. In the third chapter the preparation and quantitative determinations are presented in a truly critical manner, a matter which cannot be overemphasized in regard to the latter. Chapter IV includes an excellent compilation of the biologic distribution of creatine and creatinine. Chapters V, VI and VII deal with the formation and excretion of creatinine in mammals, the creatinine coefficient, and the biologic significance of creatine and creatinine. Creatinuria is very thoroughly treated in the eighth chapter, and the last chapter is devoted to a discussion of the possible modes of formation of creatine as usually advanced. A complete bibliography is included and throughout the work the author obviously attempted not only to be critical and fair in the evaluation of the data and conclusions of others but to quote all who have contributed thereto.

LE RÉTRÉCISSEMENT MITRAL DANS SES RAPPORTS AVEC L'ÉTAT PUERPÉRAL. Par J. Séjourné. Paper. Price, 25 francs. Pp. 156, with 26 illustrations. Paris: Gaston Doin & Cie, 1928.

The main feature of interest in this book is the emphasis laid by the author on the use of the roentgen ray as a means of determining the existence of mitral stenosis and the progress of the lesion. Changes in the size and contour of the heart and its various chambers, as well as in the hilum shadows, give valuable information as to the advance of the cardiac condition. Such examinations during pregnancy may be helpful in deciding for or against an early emptying of the uterus. In other respects the volume contains, briefly stated, the well known facts concerning the diagnosis and clinical manifestations of mitral stenosis with and without evidences of failing heart. These symptoms and signs, by the way, will generally enable the physician to settle the question as to the serious or progressive character of the valvular and muscular lesions without appeal to the roentgen ray. The author does well, however, in calling attention to the confirmatory help afforded by instrumental means. Several case histories with illustrations serve to illustrate the points under consideration.

GICHT UND RHEUMATISMUS. Ein Lehrbuch für Ärzte und Studierende. Von Dr. F. Gudzent, a. o. Professor an der Universität Berlin. Paper. Price, 12.80 marks. Pp. 189, with 41 illustrations. Berlin: Julius Springer, 1928.

This booklet sums up in an admirable manner our knowledge of gout. The complicated metabolic processes which are fundamental to this disturbance are admirably treated, and the results of the chemical studies of uric acid metabolism are thoroughly summed up. The surprising feature of the disease is, of course, the comparatively normal blood levels of uric acid found in most sufferers and the contrast with the deposits in the tissues. The assumption seems warranted that there is no interference with the elimination through the kidneys in gout, especially since injected uric acid is rapidly eliminated. Of course, the final answer to this problem is still to be given. In the section on therapy, perhaps undue emphasis is laid on the treatment in various bath institutions and springs. The author seems to believe that the benefit derived from such measures is largely from the enormous amount of water ingested and general hygienic conditions, but he dwells on the fact that most of these spring waters are radioactive and shows that the exposure to such rays increases the elimination of uric acid. Both the section on gout and that on rheumatism are copiously illustrated with photographs and roentgenograms.

A MANUAL OF SURGICAL ANATOMY. By Charles R. Whittaker, F.R.C.S., F.R.S.E., Assistant Lecturer on Anatomy, Surgeons' Hall, Edinburgh. Fourth edition. Cloth. Price, $5 net. Pp. 471, with illustrations. New York: William Wood & Company, 1928.

This is a brief and concise description of surgical anatomy. The various regions of the body are considered separately with especial regard to operative surgery. The author has pointed out how the proper choice of many surgical procedures is dependent on a thorough knowledge of anatomic structures. Well chosen and carefully labeled diagrams add to the value of the work.

Books Received

Books received are acknowledged in this column, and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. Selections will be made for more extensive review in the interests of our readers and as space permits. Books listed in this department are not available for lending. Any information concerning them will be supplied on request.

ABHANDLUNGEN AUS DEM GESAMTGEBIETE DER HYGIENE. Herausgegeben von Dr. R. Grassberger, o. ö. Professor der Hygiene in Wien. Heft 1: Zur Frage des Chlorens und Entchlorens beim Entkeimen des Trinkwassers. I. Über wirklich freies und scheinbar freies wirksames Chlor in Lösungen und dessen Nachweis. Von Dr. Karl Bauer, Dr. Franz Noziczka, und Dr. Otto Stüber. Paper. Price, 2.40 marks. Pp. 31. Leipzig: Franz Deuticke, 1928.

Brief essays on chlorination of water supplies.

PRAKTISCHE DIFFERENTIALDIAGNOSTIK FÜR ÄRZTE UND STUDIERENDE. Herausgegeben von Professor Dr. Georg Honigmann. Band IV: Chirurgie. Teil 4: Differentialdiagnose der chirurgischen Krankheiten des Rumpfes und der Extremitäten. Von Dr. August Brüning, a. o. professor für Chirurgie an der Universität Giessen. Paper. Price, 6 marks. Pp. 106. Dresden: Theodor Steinkopff, 1928.

Section on surgery of the extremities in a system of differential diagnosis.

THE SENSORY AND MOTOR DISORDERS OF THE HEART: THEIR NATURE AND TREATMENT. By Alexander Blackhall-Morison, M.D., F.R.C.P., Physician to the Children's Hospital, Paddington Green. Foreword by Sir John Rose Bradford, K.C.M.G., C.B., C.B.E., President, Royal College of Physicians. Second edition. Cloth. Price, $6. Pp. 362, with 113 illustrations. New York: William Wood & Company, 1928.

British monograph reflecting standard views.

KURZES HANDBUCH DER GESAMTEN RÖNTGENDIAGNOSTIK UND THERAPIE MIT EINEM ANHANG ÜBER DIE THERAPEUTISCHE VERWENDUNG RADIOAKTIVER SUBSTANZEN. Herausgegeben von Gerd Kohlmann. Paper. Price, 53 marks. Pp. 917, with 781 illustrations. Berlin: S. Karger, 1928.

Nine hundred and seventeen pages is this publisher's conception of a "Kurzes Handbuch."

DICTIONARY OF AMERICAN MEDICAL BIOGRAPHY. Lives of Eminent Physicians of the United States and Canada, from the Earliest Times. By Howard A. Kelly, M.D., LL.D., and Walter L. Burrage, A.M., M.D. [Revised, re-edited, rewritten.] Cloth. Price, $12. Pp. 1364. New York: D. Appleton & Company, 1928.

New printing with revisions of this marvelous collection.

TECHNIQUE OF CONTRACEPTION. The Principles and Practice of Anti-Conceptional Methods. By James F. Cooper, M.D., Medical Director of the Clinical Research Department of the American Birth Control League. Cloth. Price, $7.50. Pp. 271, with 25 illustrations. New York: Day-Nichols, 1928.

A study of all available methods, their technics and failures.

HANDBOOK OF THERAPY. By Oliver T. Osborne, M.D., and Morris Fishbein, M.D., Editor, Journal American Medical Association. Eighth edition. Cloth. Price, $2.50. Pp. 660. Chicago: American Medical Association, 1928.

Completely revised edition reflecting conservative current therapeutic methods.

LOW BLOOD PRESSURE: ITS CAUSES AND SIGNIFICANCE. By J. F. Halls Dally, M.A., M.D., B.Chir., Physician to Mount Vernon Hospital. Cloth. Price, $5. Pp. 257, with 15 illustrations. New York: William Wood & Company, 1928.

Monographic consideration along same lines as Friedlander's monograph.

THE FUNDAMENTALS OF HUMAN MOTIVATION. By Leonard T. Troland, S.B., A.M., Ph.D., Assistant Professor of Psychology, Harvard University. Cloth. Price, $5. Pp. 521. New York: D. Van Nostrand Company, Inc., 1928.

Psychologic consideration of the mainsprings of human conduct.

ANLEITUNG ZUR DIAGNOSE UND THERAPIE DER KEHLKOPF-, NASEN- UND OHRENKRANKHEITEN. Von Dr. Richard Kayser, und Prof. Dr. Walter Klestadt. Fifteenth and sixteenth edition. Boards. Price, 9.80 marks. Pp. 216, with 152 illustrations. Berlin: S. Karger, 1928.

New edition of a popular German textbook of otolaryngology.

HANDBUCH DER GEISTESKRANKHEITEN. Herausgegeben von Oswald Bumke. Teil 1. Band I, und Teil 3. Band III. Paper. Price, 66 marks, and 32 marks. Pp. 732, with 44 illustrations, and pp. 333, with 77 illustrations. Berlin: Julius Springer, 1928.

Two volume textbook of psychiatry by a German authority.

AIDS TO EMBRYOLOGY. By Richard H. Hunter, M.D., M.Ch., Lecturer in Anatomy, Queen's University, Belfast. Cloth. Price, $1.50. Pp. 160, with 30 illustrations. New York: William Wood & Company, 1928.

Pocket handbook of embryology no longer recommended as a method of study in American schools.

GOULD'S MEDICAL DICTIONARY CONTAINING ALL THE WORDS AND PHRASES GENERALLY USED IN MEDICINE AND THE ALLIED SCIENCES, WITH THEIR PROPER PRONUNCIATION, DERIVATION, AND DEFINITION BASED ON RECENT MEDICAL LITERATURE. By George M. Gould, A.M., M.D. Edited by R. J. E. Scott, M.A., B.C.L., M.D., Fellow of the New York Academy of Medicine. Second edition. Leather. Price, $7.—Thumb Index, $7.50. Pp. 1522, with illustrations. Philadelphia: P. Blakiston's Son & Company, 1928.

HANDBUCH DER UROLOGIE. Herausgegeben von A. v. Lichtenberg, F. Voelcker, und H. Wildbolz. Band III: Spezielle Urologie. Teil 1: Spezielle Pathologie und Therapie der Missbildungen. Verletzungen der Harn- und Geschlectsorgane Störungen der Blasenfunktion Nephritis. Eklampsie. Entzündliche Erkrankungen der Harn- und Geschlechtsorgane. Von Th. Cohn, P. Frangenheim, H. Gebele, usw., usw. Paper. Price, 162 marks. Pp. 1095, with 434 illustrations. Berlin: Julius Springer, 1928.

FESTSCHRIFT HERRN PROF. DR. MED. FRITZ DE QUERVAIN, DIREKTOR DER CHIRURGISCHEN KLINIK IN BERN ANLÄSSLICH SEINES SECHZIGSTEN GEBURTSTAGES GEWIDMET VON SEINEN SCHÜLERN UND FREUNDEN. Paper. Price, 20 Swiss francs. Pp. 460, with illustrations. Basel: Benno Schwabe & Company, 1928.

APPLIED CHEMISTRY FOR NURSES WITH LABORATORY EXPERIMENTS. By Joseph L. Rosenholtz, Ph.D., Professor of Geology in the Rensselaer Polytechnic Institute. Second edition. Cloth. Price, $2 net. Pp. 220, with 18 illustrations. Philadelphia: W. B. Saunders Company, 1928.

DIE METHODIK DER FERMENTE. Lieferung 3. Herausgegeben von Carl Oppenheimer, und Ludwig Pincussen. Paper. Price, 28 marks. Pp. 625-944, with 48 illustrations. Leipzig: Georg Thieme, 1928.

MONTHLY BULLETIN OF THE TRUESDALE HOSPITAL AND EARLE P. CHARLTON SURGERY, FEBRUARY-DECEMBER, 1927. Paper. Pp. 40, with illustrations. Fall River, Mass.: Truesdale Clinic, 1928.

ANNUAL REPORT OF THE DIRECTOR GENERAL, NATIONAL PUBLIC HEALTH SERVICE OF HAITI FOR THE FISCAL YEAR 1926-1927. Paper. Pp. 204, with illustrations. Port-au-Prince, 1927.

TRUDI ODESSKAVO GOSUDARSTVENAVO DERMATO-VENEROLOGICHESKOVO INSTITUTA IMENI E. S. GLAWTSCHE. YUBILEINII SBORNIK, 1919-1927. Tom Pervii. Paper. Pp. 558. Odessa, 1927.

STATISTICAL REPORT OF INFANT MORTALITY FOR 1927 IN 716 CITIES OF THE UNITED STATES. Paper. Pp. 27. New York: American Child Health Association, 1928.

BERÄTTELSE FRÅN STYRELSEN FÖR CANCERFÖRENINGEN I STOCKHOLM ÖVER VERKSAMHETSÅRET 1927. Paper. Pp. 64. Stockholm: K. L. Beckmans, 1928.

SIXTEENTH ANNUAL REPORT OF THE UNITED FRUIT COMPANY, MEDICAL DEPARTMENT, 1927. Paper. Pp. 368, with illustrations. New York, 1927.

SEVENTIETH REPORT OF THE CHURCH HOME AND INFIRMARY OF THE CITY OF BALTIMORE. Paper. Pp. 64, with illustrations. Baltimore, 1928.

Medicolegal

Trial by Jury in Revocation Proceedings

(State ex rel. Duncan v. Dean (Ore.), 262 P. 936)

In this case the state board of medical examiners revoked the license of the defendant to practice in Oregon as a physician and surgeon because of alleged unprofessional conduct. The defendant appealed to the circuit court. The cause was submitted to a jury, which returned a verdict in favor of the defendant, and the order of the state board of medical examiners was reversed. The state board appealed to the supreme court. The board argued that the circuit court had no right to submit the question as to whether the defendant was guilty of unprofessional conduct to the jury. But the supreme court held that the time to complain against having a jury was when it was about to be impaneled and sworn to try the matter. By allowing the jury to be sworn and impaneled, the board waived its right to protest and object to the jury, and it was too late to complain on appeal. The judgment of the circuit court was affirmed, and the license of the defendant reinstated.

Failure to Give Instructions as Malpractice

(Newman v. Anderson (Wis.), 217 N. W. 306)

The plaintiff sued the defendant for malpractice to recover damages for burns sustained by the application of ointment prescribed by the defendant. The plaintiff alleged that the defendant failed to give her proper instructions as to the application and the removal of the ointment. The defendant testified that he gave directions to remove the ointment if it burned and admitted that a direction to remove the ointment if it burned was essential to an exercise of the degree of care and skill required of physicians in good standing in that community when they prescribe the use of that ointment. The defendant contended, further, that the burns were proximately caused by the failure of the druggest properly to compound the ointment. This contention was denied by the druggist. A chemist, employed by the plaintiff to analyze the ointment, testified as to the result of two analyses made by him. These analyses, however, differed so widely from each other and from the prescription as to cause the chemist himself to have very little faith in the results. He explained the different results by the fact that a long time elapsed between the compounding of the ointment and his analyses of it. It was shown that there had been a previous application of ointment compounded by another druggist from the same formula which did not cause burns when applied.

In the lower court the jury found for the plaintiff, but the judge overruled this finding and dismissed the action. The plaintiff appealed. The Supreme Court of Wisconsin stated that the proof presented an issue for the jury as to whether the proximate cause of the burning was the failure of the druggist properly to compound the ointment or the failure of the defendant to give proper instructions as to its removal in case it burned. The supreme court held that the jury's finding that the negligence of the defendant was the proximate cause of the burns was sustained by the evidence and directed the court below to enter judgment for the plaintiff.

State Medical Board Certificate Evidence of Record

(Sheward v. State (Ohio) 159, N. D. 831)

Sheward was convicted of practicing medicine as a chiropractor without having a license from the state medical board. Section 12694, general code, makes such offense a misdemeanor punishable only by fine, not less than $25 nor more than $500 for the first offense. That section further provides that a certificate signed by the secretary of the state medical board and sealed, to the effect that it appears from the board records that no such license to practice medicine and surgery has been issued to any such person specified, or that a license if issued has been revoked or suspended, shall be received as prima facie evidence of the record of such board in any court or before any officer of the state. The secretary presented a certificate to the trial court stating that no license to practice had ever been issued to Sheward, who was thereupon fined and took an appeal.

Sheward claimed that the admission of the certificate violated section 10, article 1, of the Ohio constitution, which provides that "in any trial, the party accused shall be allowed . . . to meet the witness face to face"; that the admission of the certificate denied the right of the accused to meet the witness face to face. The supreme court of Ohio held that "the certificate does not come strictly within the injunctions of section 10, article 1, because documentary evidence is different from a witness appearing to testify in open court. A public document is not subject to impeachment by the ordinary methods of cross-examination of a witness. It is not discredited by the unfavorable appearance and attitude of a witness. It speaks for itself. Any public record as a rule can be impeached by testimony showing that the record does not speak the truth, or the witness who certifies it can be contradicted as not having made a true copy, or defensive evidence is admissible to show that it is not in fact a true copy of the public record. In the instant case the defendant could not have been prejudiced, because he knew whether or not he held a certificate, and he could easily have destroyed the effect of the secretary's certificate by producing his own if he had one. The right of an accused person to test the recollection or to search the conscience of a witness or to compel him to stand face to face to the jury in order that they may observe his demeanor and his manner of giving testimony, and thereby to judge his credibility, can have no practical application to public documents." The court therefore concluded that the statute was constitutional, and that the certificate offered as evidence was properly admitted.

Death from Anesthetic Compensable

(Georgia Casualty Co. v. Industrial Accident Commission (Calif.), 262 Pac. 394)

Yili Soo Lee was working for an employer who was insured by the Georgia Casualty Company under the workmen's compensation act. While engaged in his work, Lee received an incision of his left thumb, which severed a tendon. Both Lee and his employer then consulted the officials of the Georgia Casualty Company. They were instructed by its agents to have Lee undergo treatment by certain physicians. The physicians administered nitrous oxide, a general anesthetic, which was considered by them to be the safest to use to cause a relaxation of the tendon so that it might be properly stitched together. However, there existed in Lee's neck a gland which is usually present only in infants and was a very rare condition to exist in one of his age. This condition could not have been discovered before death. It was of such a nature, it was testified, that it made the administration of the anesthetic necessarily fatal. Action was brought by Lee's relatives against the Georgia Casualty Company for death benefit and burial expenses. The insurance company objected that the death was not directly caused by the incision of the thumb but was caused solely by reason of the administration of the anesthetic. But the District Court of Appeals, Second District, division 1, ruled that under the circumstances the original injury was a continuing operative cause of the employee's death and the administration of the anesthetic was not an independent and separately operating cause of his death. Damages for $1,745.25 were awarded to the relatives.

Father Not Liable for Medical Services to Adult Daughter

(Lind v. Zeisel (Ohio), 159 N. E. 849)

Action was brought to recover for medical services performed for and on behalf of the daughter of defendant. It appears that the daughter was 24 years of age but lived at home with her father, the defendant. She was taken ill and her mother called the plaintiff, but the father knew nothing of this. The plaintiff ordered the daughter to a hospital, where he performed an operation. Subsequently she returned to her father's home and later was again taken to the hospital, where the physician performed another operation. The mother paid the hospital bills, but nothing was ever said by anybody as to the payment for the services until after the second operation, when the physician became anxious to know where he was to get his money. He spoke to both the mother and father, who disclaimed any financial responsibility, whereupon he brought suit. The Court of Appeals of Ohio, Cuyahoga County, held that since the daughter was an adult and since there was no contract either express or implied, the father was not liable, though he would have been if he had requested the service and subsequently promised payment.

"Unusual" Cases Under Compensation Acts

(Pappas v. United States Mutual Liability Ins. Co. (Mass.), 159 N. E. 635; Meuse's Case, (Mass.), 159 N. E. 636)

In the first case, Pappas was injured by a box of chips, weighing 500 or 600 pounds, falling on his right foot. His foot continued to pain him for some time, and his physician attended him for two months and ten days. A roentgenogram of his foot was taken. His physician testified that the patient could not sleep; that morphine was injected into his arm, and that he was in much pain. He brought a proceeding under a Massachusetts Statute, G. L. C. 152, section 30, which gives the industrial accident board of that state authority in "unusual cases" to require the insurer to furnish adequate medical and hospital services for a longer period than two weeks. The industrial accident board decreed that the United States Mutual Liability Insurance Company, the insurer, be required to furnish medical and hospital services for a longer period than two weeks. The insurer appealed and the Supreme Judicial Court of Massachusetts held that there was no evidence which justified the finding of the industrial accident board that it was an unusual case. While the injury was serious and the employee suffered pain, that was not enough to establish that the case was so unusual as to require medical services beyond the two weeks specified in the statute. The statute limited the right to receive medical services after the two weeks to unusual cases in which there were complications or unusual developments only. Merely because the injury lasted longer than two weeks did not make it unusual as provided by the statute. The court held that whether a case presented "unusual aspects" was for the industrial accident board to decide and was not a proper subject for opinion evidence.

In the second case, Meuse suffered an injury while working: a complete severance of the spinal cord, a compression fracture of the eleventh and twelfth dorsal vertebrae, fracture of the lower ribs on the right side, dislocation of the upper segments of the spine, and complete paralysis below the waist involving both legs, the bladder and the rectum. After a hearing in 1925 the industrial accident board decided that Meuse's case was an "unusual" one within the meaning of the act and ordered the insurer to continue to pay a special nurse who had been employed at $16 a week, while his services were rendered under the direction of the physician in charge, and while Meuse was helpless. In 1927 another hearing was had before the board to determine whether the case was still an "unusual" one. The board found no material change in Meuse's condition since 1925 and ordered that the payments for nursing be continued. The insurer appealed and contended that the expenses for the nurse were not for "medical services"; that no improvement would likely result to Meuse; that he required only ordinary attention, and that an end-result had been reached in the recovery of the employee from his injury.

In sustaining the order of the industrial accident board, the Supreme Judicial Court of Massachusetts held that the term "medical services" is broad enough to include those of a nurse or trained attendant rendered under the direction and control of a physician. As to the case being "unusual," the court said that the nature of the injury is to be considered, as well as the conditions resulting from it and the kind of medical or hospital treatment required. The statute has reference to cases that develop unexpected or unusual complications requiring the services of experts or unusual treatment. In this case, the employee's injuries could be found to be unusual from the point of view of their seriousness and of the parts of the body paralyzed or otherwise affected. There was evidence that the case differed from others of a similar nature because of the length of time during which medical assistance had been required. The attending physician testified that he had never known of a person with a severed spinal cord to continue to live as long as the employee had lived; that he needed a special kind of care on which his life depended; that special braces were required for his legs, and that the construction of a kind of trapeze over

his head was needed to enable him to lift his body with his arms. The court held that the board could even have found the case "unusual" because of the nature of the services made necessary because of the complete paralysis of the employee below the waist.

Roentgenograms as Evidence

(Vale v. Campbell (Ore.), 263 Pac. 400)

This is an action to recover damages alleged to have been sustained by plaintiff as the result of negligence by the defendant in the treatment of a broken femur. The jury in the lower court returned a verdict for the defendant. The plaintiff appealed to the supreme court of Oregon.

The plaintiff complained of a ruling of the lower court admitting the testimony of a physician that certain roentgenograms of the injured femur supported his diagnosis, when such roentgenograms were not produced at the trial. The supreme court held that there was no error in admitting this testimony, since proper showing was made that the roentgenograms were lost. The supreme court held also that the roentgenograms themselves were admissible as evidence, but only when supported by the testimony of the party taking them or an expert who knew them to show accurately the true condition of the object represented thereby. Roentgenograms are used as other maps, plats, or representations of physical objects are employed as evidence. They are valuable only when supported by the testimony of a witness. Roentgenograms differ from ordinary photographs in that the ordinary person is not sufficiently familiar with them to be able at all times to discern what they represent. It is competent for one to have his expert in such matters to explain roentgenograms under proper supervision, so that the court and jury may view the picture as the witness does.

The plaintiff objected to the following question asked an expert witness in the lower court: "What results have you usually obtained in your own practice in cases of oblique fracture of the right femur bone?" The objection to this question was that it called for the particular experience of the witness rather than the standard of practice in the community where the plaintiff was treated or similar communities. The supreme court held that the question was subject to criticism, but that since the answer of the witness showed clearly that he had in mind the general result of treating such cases in similar communities, the admission of the answer was harmless.

The supreme court held that the issue of negligence was properly submitted to the jury, and its verdict was conclusive on that question and the judgment of the lower court was affirmed.

Ownership of Invention by Public Health Service Employee

(Houghton v. United States, 23 Fed. (2d), 386)

This is an appeal from a decision of the District Court of the United States for the District of Maryland, holding that the United States is the equitable owner and entitled to the assignment of a patent issued to the plaintiff in error, Houghton.

Houghton was appointed assistant chemist in the office of industrial hygiene and sanitation in the Public Health Service. In the course of his duties he was designated to conduct experiments for the purpose of combining a warning or irritant gas with hydrocyanic acid gas, so as to produce a gas which could be readily detected and thus safely used as a fumigant. Houghton was familiar with the results of the experiments and investigations which had previously been conducted by or at the request of the Public Health Service, and during the process of the investigation suggestions were contributed by the chemists of the Chemical Warfare Service, who were at work with him on the problem. The experiments resulted in production of the desired gas, which was a mixture of hydrocyanic acid gas and cyanogen chloride, through a proper combination of sodium chlorate, sodium cyanide, and dilute hydrochloric acid.

Prior to the development of the desired gas, nothing was said as to securing a patent, and the patenting of the gas or of the method of producing it seems not to have been considered. After the experiments had proved successful, however, Houghton made arrangements for filing an application for a patent, on which a patent was granted.

The case here presented is that of an employee who makes a discovery or invention while employed to conduct experiments for the purpose of making it. Houghton did not conceive the idea of combining an irritant gas with hydrocyanic acid gas so as to produce a safe fumigant. That was the idea of the Surgeon General, under whom he was working. He did not conceive the idea of using cyanogen chloride gas as the irritant with the deadly gas. That idea had been advanced in a German periodical, and experiments and studies along that line had previously been conducted at the direction of the Public Health Service. All that he did was to take the idea of the Surgeon General, on which the Public Health Service had been experimenting, and conduct experiments under its direction, for the purpose of determining how best to produce and combine the gases so as to achieve the result which the Surgeon General had in mind.

In affirming the decree of the district court, the circuit court of appeals, fourth circuit, held that an employee performing all the duties assigned to him in his department of service may exercise his inventive faculties in any direction he chooses, with the assurance that whatever invention he may thus conceive and perfect is his individual property. There is no difference between the government and any other employer in this respect. But this general rule is subject to these limitations. If one is employed to devise or perfect an instrument, or a means for accomplishing a prescribed result, he cannot, after successfully accomplishing the work for which he was employed, plead title thereto as against his employer. That which he has been employed and paid to accomplish becomes, when accomplished, the property of his employer. Whatever rights as an individual he may have had in and to his inventive powers, and that which they are able to accomplish, he has sold in advance to his employer.

Society Proceedings

COMING MEETINGS

American Academy of Ophthalmology and Otolaryngology, St. Louis, Oct. 15-19. Dr. William P. Wherry, Medical Arts Bldg., Omaha, Sec.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Toronto, September 10-12. Dr. James E. Davis, 1825 Geddes Avenue, Ann Arbor, Mich., Secretary.

American Association of Railway Surgeons, Chicago, October 31-November 2. Dr. Louis J. Mitchell, 29 East Madison Street, Chicago, Sec'y.

American Child Health Association, Chicago, Oct. 15-19. Dr. Philip Van Ingen, 125 East 71st Street, New York, Secretary.

American College of Physical Therapy, Chicago, October 8-13. Dr. R. W. Fouts, Medical Arts Building, Omaha, Secretary.

American College of Surgeons, Boston, October 8-12. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Electrotherapeutic Association, Boston, Sept. 10-14. Dr. Richard Kovacs, 223 East 68th Street, New York, Secretary.

American Public Health Association, Chicago, Oct. 15-19. Mr. Homer N. Calver, 370 Seventh Avenue, New York, Executive Secretary.

American Roentgen Ray Society, Kansas City, Mo., September 24-29. Dr. John T. Murphy, 421 Michigan Street, Toledo, Ohio, Secretary.

American Social Hygiene Association, Chicago, Oct. 15-19. Dr. W. F. Snow, 370 Seventh Avenue, New York, General Director.

Association of American Medical Colleges, Indianapolis, October 29-31. Dr. Fred C. Zapffe, 25 East Washington Street, Chicago, Secretary.

Association of Military Surgeons of the United States, Baltimore, October 4-6. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Sec'y.

Colorado State Medical Society, Colorado Springs, Sept. 11-13. Dr. F. B. Stephenson, Metropolitan Building, Denver, Secretary.

Delaware, Medical Society of, Rehoboth, Sept. 11-12. Dr. W. O. La Motte, Industrial Trust Building, Wilmington, Secretary.

Indiana State Medical Association, Gary, September 26-28. Mr. T. A. Hendricks, Hume-Mansur Building, Indianapolis, Executive Secretary.

Kentucky State Medical Association, Richmond, Sept. 10-13. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Michigan State Medical Society, Detroit, September 26-28. Dr. F. C. Warnshuis, G. R. National Bank Building, Grand Rapids, Secretary.

Nevada State Medical Association, Reno, September 21-22. Dr. H. J. Brown, Box 688, Reno, Secretary.

New York and New England Association of Railway Surgeons, New York, October 12-13. Dr. Brooks W. McCuen, 423 James Street, Syracuse, New York, Secretary.

Oregon State Medical Society, Portland, September 20-22. Dr. F. D. Stricker, 410 Taylor Street, Portland, Secretary.

Pennsylvania, Medical Society of the State of, Allentown, October 1-4. Dr. W. F. Donaldson, Jenkins Arcade, Pittsburgh, Secretary.

Vermont State Medical Society, Burlington, October 11-12. Dr. William G. Ricker, 29 Main Street, St. Johnsbury, Secretary.

Virginia, Medical Society of, Danville, Oct. 16-18. Miss Agnes V. Edwards, 104½ West Grace Street, Richmond, Secretary.

Western Branch of the American Urological Association, San Francisco-Del Monte, September 13-15. Dr. W. E. Stevens, Flood Building, San Francisco, Secretary.

Wisconsin, State Medical Society of, Milwaukee, Sept. 11-14. Mr. J. G. Crownhart, 153 East Wells Street, Milwaukee, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Issues of periodicals are kept on file for a period of five years only. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending, but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstet. & Gynecology, St. Louis

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*Radiotherapy in Carcinoma of Ovary. F. A. Ford, Rochester, Minn. —p. 1.
Rebellious Cervicitis from Cysts High in Canal. R. L. Dickinson, New York.—p. 11.
*Relation Between Structure and Prognosis in Cervical Carcinoma Under Radiation Treatment. W. P. Healy and M. Cutler, New York.—p. 15.
Mixed Tumors of Cervix Uteri "Sarcoma Botryoides": Two Cases. D. M. Cox and W. L. Benischek, Cleveland.—p. 28.
Interstitial Pregnancy: Undiagnosed Case with Fatal Rupture. M. Douglass, Cleveland.—p. 35.
Diffuse Pelvic Endometrioma Constricting Ureters. A. H. Morse and I. H. Perry, New Haven, Conn.—p. 38.
Placenta Accreta. J. N. Nathanson, New York.—p. 44.
*Review of One Thousand and One Obstetric Cases. S. E. Tracy and A. First, Philadelphia.—p. 51.
Gynoplastic Repairs of Old Lacerations Following Childbirth; 1,019 Cases. J. L. Bubis, Cleveland.—p. 57.
*Olshausen Operation for Retroversion of Uterus. D. N. Barrows, New York.—p. 61.
*Fetal Mortalities. G. Kamperman, Detroit.—p. 66.
Present Status of Ergot Question. E. E. Nelson and G. L. Pattee, Ann Arbor, Mich.—p. 73.
Relation of Gallbladder Disease to Pregnancy: Factor of Hypercholesterolemia. L. K. Ferguson and J. T. Priestley, Philadelphia.—p. 82.
*Biologic Significance of Lowered Blood Sugar Values in Vomiting of Pregnancy. P. Titus and P. Dodds, Pittsburgh.—p. 90.
*Biochemical Changes in Blood Following Radium Therapy. H. B. Matthews and V. P. Mazzola, New York.—p. 97.
*Intra-Abdominal Hemorrhage from Rupture of Uterine Vein During Pregnancy. J. R. Miller, Hartford, Conn.—p. 103.
Puerperal Gangrene of Both Legs, Double Amputation: Recovery. R. M. Toll, Scranton, Pa.—p. 108.
Edema of Cervix in Pregnancy: Case. J. R. Manley, Duluth, Minn.—p. 109.
Puerperal Tetanus in Hawaii. G. C. Milnor, Honolulu.—p. 111.
Acute Lymphatic Leukemia with Myelophthisic Anemia Complicating Pregnancy. W. Allan, Charlotte, N. C.—p. 112.
*Placental Transmission of Insulin from Fetus to Mother. G. T. Pack and D. Barber, Tuscaloosa, Ala.—p. 115.
*New Method of Removing Large Abdominal Tumor Through Small Incision in Abdominal Wall. A. Stein, New York.—p. 118.
Simplified Powder Blower. M. Schneider, New York.—p. 119.
Modification of Bivalve Vaginal Speculum. J. B. Bernstine and T. L. Montgomery, Philadelphia.—p. 120.

Radiotherapy in Carcinoma of Ovary.—Of fifty-nine patients with ovarian carcinoma treated by irradiation, Ford reports that eighteen survived for from four to seven years, seventeen being alive at present. Four of the fifty-nine patients could not be traced beyond a three-year period. Repeated moderate irradiation or carefully graded doses for cachectic patients have given superior results to those of more intensive irradiation.

Prognosis of Carcinoma of Cervix Under Radiation Treatment.—Healy and Cutler state that under radiation treatment the prognosis of cancer of the cervix improves with the degree of anaplasia of the tumor. This is due to the greater radiosensitivity of the more anaplastic tumor and results in a high percentage of cures in a group in which the surgical results have been especially unfavorable. Radiation therapy of advanced uterine cancer may result in a cure in a relatively high proportion of cases when the tumor is of the radiosensitive type, whereas in the radioresistant type the prognosis is distinctly worse and only a palliative result can be expected. The results of this study confirm the biologic relationship between anaplasia and radiosensitivity and demonstrate the ability to cure advanced disease of the most malignant type by radiation in a high proportion of cases.

Value of Prenatal Care.—The analysis made by Tracy and First of 1,001 cases showed that careful prenatal care as carried out in all well regulated clinics saves many patients later complications and reduces maternal and fetal mortality. Watchful waiting and allowing nature its full opportunity will diminish the incidence of forceps deliveries and extensive lacerations. The majority of cases of placenta praevia can be successfully treated conservatively. Only a very small percentage of cases require cesarean section. Contracted pelves are only relative, and much depends on the size and position of the child. Unless there is a decided disproportion, the patient should be given a real test of labor before a cesarean section is elected. Pregnant women with cardiac diseases should be treated by prolonged rest in bed, proper medication and analgesic remedies during the first stage of labor and then be delivered with forceps under light anesthesia. Elimination of the abdominal binder after twelve hours, position and exercises will materially reduce the number of retrodisplacements of the uterus. The postpuerperal supervision and care of the patient is most beneficial and should receive more earnest and efficient attention.

Value of Olshausen Operation.—Barrows' results with the Olshausen operation compare favorably with those he has obtained with the Webster-Baldy and Simpson-Montgomery procedures. Pregnancy, whether terminating at full term or prematurely, has proved that there is little choice between the three methods. Intestinal obstruction following the Olshausen operation is rare. The silk ligature seldom causes trouble. The ease and rapidity of accomplishment recommend the Olshausen operation, as well as the absence of unnecesary trauma to adjacent structures.

Fetal Mortalities.—Among 2,478 births reported on by Kamperman, there were 163 deaths, 6.65 per cent mortality. In sixty-three cases the fetus was nonviable. The birth was premature in twenty-two cases. In twenty-seven cases the cause of death was not known. In thirty-three cases, death was due to a nephritic toxemia; in eighteen cases, to placental bleeding; in another eighteen cases to malformations and in still another eighteen cases to delivery. There were eleven labor deaths, five prolapse of cord, six neonatal and four postmaturity deaths. Only three were due to eclampsia.

Blood Sugar in Vomiting of Pregnancy.—Titus and Dodds conclude that the carbohydrate deficiency theory as the chief underlying factor in the causation of pregnancy toxemias has been physiologically reasonable; the success for the therapeutic measures founded on this theory has been convincing, but laboratory proof of its correctness has been lacking. The reason for the successful results from the hitherto empiric treatment of hyperemesis by intravenous injections of dextrose and other administration of carbohydrates is now apparent. The use of insulin without dextrose in hyperemesis is shown by these low sugar values to be a dangerous procedure. Its use with dextrose has already been questioned. Careful laboratory control of the chemistry of the blood of these patients, with particular respect to their blood sugar values, is essential to their treatment.

Biochemical Changes in Blood Following Radium Therapy.—Forty-one per cent of the cases reported on by Matthews and Mazzola showed a mild reaction which might have been due in part to the preoperative atropine and morphine and the anesthetic. Blood urea was elevated slightly in both benign and malignant conditions following radium irradiation. No definite relationship could be established between the increase in the blood urea and the reaction. The carbon dioxide combining power of the blood was not affected by irradiation. The chemical and laboratory observations did not indicate any evidence of renal impairment following irradiation.

Rupture of Uterine Vein During Pregnancy.—Miller reports a case of intra-abdominal hemorrhage caused by rupture of a vein in the wall of the uterus during the thirty-first week of pregnancy, with operation and recovery.

Placental Transmission of Insulin.—Pack and Barber state that insulin is transmitted through the placenta of the goat from fetus to mother, as determined by variations in maternal blood sugar levels following intrafetal injection of commercial insulin.

Method of Removal of Large Abdominal Tumor.—Instead of attempting to deliver the growth with the hand by passing the fingers around one of its poles, Stein uses a number

3 or 4 Deaver or Fritsch retractor. The blade of the retractor is passed around the growth, so that the pole lies in its concavity. The difference between the thickness of the retractor and that of the hand is so considerable as to allow of a smaller incision when the instrument is used. While traction is made on the retractor, an assistant presses against both sides of the patient's abdomen so as to facilitate delivery. Frequently this maneuver is successful in delivering the growth from the abdomen through a surprisingly small incision. When the tumor is bound down by numerous adhesions, the method is not available unless the adhesions can be separated first. The types of neoplasms for the removal of which it is most applicable are large uterine fibromyomas or ovarian cysts, when it is not advisable to aspirate the contents before removal.

American J. Ophthalmology, Chicago

11: 599-684 (Aug.) 1928

Fundus Conditions Requiring Differentiation from Intra-Ocular Tumor. R. I. Lloyd, New York.—p. 599.
Endothelioma of Orbit: Case. L. L. Mayer, St. Louis.—p. 617.
Radium Therapy in Vernal Catarrh: Six Cases. F. C. Cordes and W. D. Horner, San Francisco.—p. 622.
Test Letters Which Comply with Phylsiologic Requirements of Visual Test Object. A. Cowan, Philadelphia.—p. 625.
Acute Rise of Tension Following Use of Epinephrine in Glaucoma. S. R. Gifford, Omaha.—p. 628.
Diagnosis and Treatment of Incipient Glaucoma. R. J. Curdy, Kansas City, Mo.—p. 632.
Management of Established Glaucoma. E. N. Robertson, Concordia, Kan.—p. 638.

American J. Psychiatry, Baltimore

8: 1-207 (July) 1928

Thirty-Five Years of Psychiatry in United States and Present Outlook. A. Meyer, Baltimore.—p. 1.
Science and Legal Procedure. R. Pound, Boston.—p. 33.
Specific Gravity of Blood Serum and Intradermal Saline Tests as Indices of Water Metabolism. K. E. Appel and C. B. Farr, Philadelphia.—p. 53.
*Sedimentation Test: Use as Routine Procedure in Psychiatric Institutions. J. Goldwyn, Worcester, Mass.—p. 59.
*Epinephrine Blood Pressure Curves in Dementia Praecox and Emotional Psychoses. L. Kanner, Yankton, S. D.—p. 75.
*Experimental Aseptic Meningitis. P. E. Kubitschek, Philadelphia, and F. A. Carmichael, Osawatomie, Kan.—p. 97.
*Epilepsy and Endocrines. J. C. Partridge, Sonyea, N. Y.—p. 137.
Group Analysis. H. C. Syz, New York.—p. 141.
Developmental Age. P. H. Furfey, Brookland, D. C.—p. 149.
Psychopathic Personalities Among Boys in Training School for Delinquents. G. E. Partridge, Baltimore.—p. 159.

Value of Sedimentation Test in Psychiatry.—Because the sedimentation reaction is helpful in determining the diagnosis, the differential diagnosis and the progress of many mental and physical diseases; and because it is an efficacious and reliable detector of many pathologic conditions, especially in dealing with the insane, Goldwyn deems it of sufficient practical and clinical value to warrant its use as a routine procedure in psychiatric institutions.

Epinephrine Blood Pressure Curves in Dementia Praecox.—All thirty-four selected cases of dementia praecox reported on by Kanner, after injection of 1 cc. of epinephrine hydrochloride solution 1:1,000, yielded typically vagotonic blood pressure curves. The degree of vagotonia, as pictured by the epinephrine blood pressure curves, did not seem to depend on certain "types" of dementia praecox but on the degree of emotional indifference. Conditions of acute excitement formed, in addition to the epinephrine, an aid to the sympathicus. Five cases of either manic excitement or depressive agitation yielded typically sympathicotonic curves. Three of stuporous melancholia presented pronounced vagotonic epinephrine blood pressure curves. The epinephrine blood pressure test should, in Kanner's opinion, be made a routine examination both in cases of dementia praecox and in the emotional psychoses, wherever possible.

Experimental Aseptic Meningitis.—Kubitschek and Carmichael assert that development of aseptic meningitis produces temporary improvement in a large percentage of both chronic and early cases of dementia praecox and other psychosis. The incidence and degree of permanent improvement is much greater in dementia praecox of early stages than in the chronic, deteriorated types. Aseptic meningitis as a therapeutic measure is of little value in the treatment of chronic dementia praecox. It seemed to be a definite value in certain cases of early dementia praecox and psychosis of a toxic and infectious nature.

Epilepsy and Endocrines.—As menstruation is known to be intimately associated with the endocrine system, an effort to demonstrate endocrine dysfunction was made by Partridge by the study of the menstrual records of 124 female patients over a period of five years. The minimum age at the beginning of this period was 35 years. (Pregnancy is excluded.) The subject was approached from two angles: first, those in whom the menses were definitely known to be absent for three consecutive months and, second, those in whom the menses were definitely known to have been absent for ten or more months during the period. The first group gave a total of thirty-five, or 28 per cent, and the second group a total of twenty-two, or 17 per cent.

American J. Syphilis, St. Louis

12: 301-444 (July) 1928

Sex Differences in Pathologic Picture of Syphilis. A. S. Warthin, Ann Arbor, Mich.—p. 301.
Syphilitic Aortitis, Thrombo-Ulcerative Mitral Endocarditis with Pseudo-Aneurysm of Anterior Mitral Leaflet: Case. M. J. Steinberg, Chicago.—p. 316.
Syphilis of Thyroid Gland. C. E. Henry, Minneapolis.—p. 322.
Diagnosis of Syphilis of Stomach. A. S. Welch, Kansas City, Mo.—p. 325.
Treatment of Severe Anemias Associated with Syphilis with High Caloric Diet, Rich in Liver Extract and Vitamins. S. Maurer, O. Richter and K. K. Koessler, Chicago.—p. 328.
*Diagnosis of Syphilis from Standpoint of Internist: Incidence of Neurosyphilis. W. C. Stoner, Cleveland.—p. 340.
Syphilis: Treatment. L. C. Sanders, Memphis, Tenn.—p. 350.
Consideration of Syphilis in Diagnosis and Treatment of Lung Diseases. J. H. Skavlem, Cincinnati.—p. 355.
*Technic for Injections into Gluteal Muscles. C. P. Mathé, San Francisco.—p. 362.
*Effect of Therapeutic Doses of Arsphenamine on Injured Liver (Experimental). F. A. McJunkin, Chicago.—p. 365.
*Sodium Thiosulphate: Toxicity and Chemical Changes in Blood: Intravenous Administration. S. Goldblatt, Cincinnati, and C. C. Dennie, Kansas City, Kan.—p. 369.
Modern Methods in Treatment of Syphilis: Based on Survey of Literature of Past Five Years and Administration of More Than Thirty Thousand Treatments. A. E. Jones, Chicago.—p. 374.
Toxicity of Colloidal Sulphides of Some Heavy Metals for Rabbits. G. E. Wakerlin and C. Eiseman, Chicago.—p. 384.
Wassermann-Fast Syphilis. N. Tobias, St. Louis.—p. 396.
Comparative Study of Meinicke Turbidity and Kahn Precipitation Reactions in Syphilis and Allied Diseases of Tropics. R. R. Gasser, Washington, D. C.—p. 403.

Prevalence of Neurosyphilis.—Stoner asserts that approximately 5 per cent of the white population of his community are syphilitic from observations made over a period of ten years and that the last five years of this period shows a much lower incidence. Unrecognized and improperly treated syphilis is very much less common than even ten years ago. The Wassermann reaction is only an adjunct in diagnosis and cannot be applied rationally, independent of history and clinical picture. Neurosyphilis is probably less common than formerly, as shown by a much smaller incidence in the last five-year period, during which a larger volume of cases for diagnosis were studied than in the first five-year period. A survey of admissions to hospitals over the country for a ten-year period indicates a definite lowering of the incidence of neurosyphilis. Syphilitic aortitis is recognizably present in only a small percentage of neurosyphilitic involvements.

Technic for Injections into Gluteal Muscles.—A simple and safe method is proposed by Mathé, based on an anatomic dissection of the structures of the gluteal region, for the intramuscular administration of the various insoluble salts of arsenic, mercury and bismuth, in the treatment of syphilis. The muscles most often employed are those of the gluteal region. The method consists of making a deep injection at an oblique angle into the superior and inferior layers of muscles of the gluteal region in the area corresponding to the midpoint of a line drawn from the tip of the sacrum to the anterior superior spine. When this method of injection is employed, the solutions are more likely to enter into the fleshy portion of the gluteal muscles, and less likely to injure the great sciatic nerve or enter the blood streams or cause the formation of painful, persistent nodules. Also there is less likelihood of immediate pain with the injection.

Effect of Arsphenamine on Injured Liver.—The experimental work done by McJunkin on rabbits would indicate that

a nonsyphilitic lesion of the liver, whether acute or chronic, is not of itself a contraindication to the arsphenamine treatment of the individual's syphilis.

Sodium Thiosulphate for Intravenous Use.—Experimental work done by Goldblatt and Dennie shows that chemically pure sodium thiosulphate precipitated from aqueous solution by alcohol may be used as an intravenous medicament without fear of reaction. Ordinary chemically pure sodium thiosulphate is unfit for intravenous use because of the liability to produce a primary convulsive reaction which may terminate fatally. Changes in the chemistry of the blood due to the injection of sodium thiosulphate are apparently confined to a moderate increase in the chloride content and a depression of the dextrose. When death is produced by less than fourteen daily injections of the toxic drug, the animal does not present any typical gross pathologic changes.

American J. Tropical Medicine, Baltimore

8: 261-362 (July) 1928

Transmission of Yellow Fever by Mosquitoes Other Than Aedes Aegypti. J. H. Bauer.—p. 261.
Attempts to Infect Aedes Aegypti (Stegomyia Fasciata) of West Africa with Leptospira Icteroides by Feeding on Infected Guinea-Pigs and on Culture Suspensions. I. J. Kligler, Lajos, Nigeria.—p. 283.
Occurrence of Rickettsia in Mosquitoes (Aedes Aegypti) Infected with Virus of Dengue Fever. A. W. Sellards, Boston, and J. F. Siler, Manila, P. I.—p. 299.
Gametocytes of Tertian Malaria and Their Early Appearance in Malaria Transmitted by Anopheles Punctipennis. J. H. St. John, Washington, D. C.—p. 305.
Trichomonas in Tissue Cultures. M. J. Hogue, Philadelphia.—p. 325.
Species of Cestode Genus Bertiella in Man and Chimpanzee in Cuba. H. B. Cram, Washington, D. C.—p. 339.
Flagellated Protozoa of Intestine: Specific Analysis of Conditions Related to Their Presence. K. M. Lynch, Charleston, S. C.—p. 345.
*Experiments with Use of Carmine Stains for Detection and Differentiation of Intestinal Protozoa. J. A. Curran, Peking.—p. 353.

Detection of Intestinal Protozoa.—Of all methods tried by Curran, deep staining with Harris hematoxylin and Best's carmine gave the best results. It was found that, if carmine-stained smears were washed in water for ninety seconds, the cysts still retained a distinctive red color against a declorized background and could be easily seen under a low-power objective. Nuclear details were clear, although usually not quite equal to the iron-hematoxylin. The chromatoidal bodies stained so clearly against a red background as to be seen under low power. *Iodamoeba buetschlii* may be found with this technic when missed by other methods. The technic described takes ninety-one minutes, or about twice as long as the iron-hematoxylin method. Because of the resistant walls of the cysts, it seems unlikely that a shorter method will produce satisfactory details. In staining trophozoites, only eighty-three or eighty-four minutes is required. Measured by time spent in staining preparations of tissue it is not a long one, and it can be easily carried out by any technician. If it will save time for the diagnostician, the extra time in preparation will be well spent.

Archives of Otolaryngology, Chicago

8: 1-126 (July) 1928

Purulent Meningitis. E. Schmiegelow, Copenhagen, Denmark.—p. 1.
Contraction of Visual Fields in Cases of Progressive Deafness: Report of Cases and Comparison with Cases of Deafness of Other Types. M. J. Gottlieb, New York.—p. 12.
Tracheobronchial Tree in Children: Blood Aspirated During Tonsillectomy and Adenoidectomy Under Ether Anesthesia. H. H. Vail, Cincinnati.—p. 26.
*Ligation of External Carotid Artery for Persistent Nasal Hemorrhage. B. H. Abrahams, New York.—p. 29.
Radical Operation on Mastoid: End-Results in 100 Unselected Cases. L. E. White, Jr., Boston.—p. 32.
Operation for Relief of Abductor Paralysis of Larynx. J. E. MacKenty, New York.—p. 37.
Irrigations with Aqueous Solution: Their Effect on Membranes of Upper Respiratory Tract of Rabbit. W. B. Stark, Rochester, Minn.—p. 47.
Histology and Pathology of Articulation of Auditory Ossicles. J. G. Druss, New York.—p. 56.
Congenital Esophageal Stenosis. C. A. Heatly, Rochester, N. Y.—p. 66.
Suggestion Regarding Treatment of Conditions Ordinarily Included Under Chronic Catarrhal Otitis Media. L. K. Pitman, New York.—p. 70.
Operative Procedure Suggested for Sinus Thrombosis. J. L. Maybaum, New York.—p. 75.
New Rhinoplastic Instrument. J. Safian, New York.—p. 78.
Degree of Malignancy of Carcinoma of Esophagus. A. C. Broders and P. P. Vinson, Rochester, Minn.—p. 79.
Paranasal Cavities: Review of Literature of 1927. D. C. Smyth, Boston.—p. 81.

Ligation of External Carotid for Persistent Epistaxis.—A case is reported by Abrahams in which the patient suffered from severe nasal hemorrhage following an operation on the ethmoid and sphenoid sinuses. The usual means of controlling hemorrhage, including transfusion, were of no avail. Ligation of the external carotid artery was performed because of the persistent recurrent bleeding. This procedure proved effective.

Archives of Pathology, Chicago

6: 1-180 (July) 1928

*Experimental Pigment Cirrhosis Due to Copper Poisoning: Its Relation to Hemochromatosis. E. M. Hall and E. M. Butt, San Francisco.—p. 1.
*Multiple Necrosis of Spleen: "Speckled Spleen" of Feitis. K. Hosoi, New York.—p. 26.
Finer Structure of Lung: Its Vascular Character and Its Pathologic Significance. S. B. Rose, Montreal.—p. 36.
Hypogastro-Etroschisis, Spina Bifida, Diaphragmatic Hernia and Left Renal Agenesia in Viable Full Term Child. G. J. Rukstinat and J. D. Balfour, Chicago.—p. 48.
Experimental Myocarditic Lesions in Rabbit: Effect on Myocardial Abscess from Intravenous Injection of Staphylococci. S. Johnson and W. J. Siebert, St. Louis.—p. 54.
*Biometric Studies in Pathology: VI. Primary Site of Cancers and of Other Malignant Tumors. R. Pearl and A. L. Bacon, Baltimore.—p. 67.
Lipoid Cell Splenohepatomegaly (Niemann). M. Lederer, New York.—p. 90.
Identification of Human Seminal Stains: Precipitin Reaction of Seminal Fluid. L. Hektoen and G. J. Rukstinat, Chicago.—p. 96.
Method of Making Repeated Determinations of Intra-Arterial Systolic Blood Pressure in Dogs. C. R. Jensen and C. W. Apfelbach, Chicago.—p. 99.
Diabetes Insipidus: Clinical Review and Analysis of Necropsy Reports. E. B. Fink, Chicago.—p. 102.

Pigment Cirrhosis Due to Copper Poisoning.—In the light of the experimental data which show that alcohol has an inhibitory effect on the injurious properties of copper, or, what is perhaps more likely, reduces the absorption of copper salts from the gastro-intestinal tract, it seems unlikely to Hall and Butt that consumption of alcoholic beverages containing copper can be responsible for hemochromatosis in man. Chronic poisoning with copper salts over long periods produces in rabbits a pigment cirrhosis resembling closely the early manifestations of hemochromatosis in man. Alcohol administered in conjunction with copper acetate not only fails to hasten or augment the production of pigment cirrhosis but also reduces materially the storage of copper in the liver in both rabbits and white rats.

Multiple Necrosis of Spleen.—To date, only thirteen cases of the so-called fleckmilz of Feitis have been reported in the literature. An additional case of speckled spleen of the arteriosclerotic-autotoxic-thrombotic type is reported by Hosoi. The gross picture is strikingly characteristic. The affected spleen is literally speckled with many firm, yellowish connecting areas of necrosis, of bizarre shapes and varied sizes with or without infarct-like borders, on a dark red background of variegated intensity. Such a spleen apparently does not produce symptoms or signs recognizable clinically. All cases reported so far have been found accidentally at necropsy.

Primary Site of Cancer.—Pearl and Bacon present detailed tabulations showing the site of the primary tumor in 816 cases of malignant neoplasms. These data indicate that in males malignant tumors occur most often in the alimentary tract and its associated glandular organs, and in females in the reproductive system (primary and secondary sex organs). Sarcoma and other noncarcinomatous malignant neoplasms do not exhibit any corresponding concentration of organologic location. Only one case of multiple primary malignant growth occurred. There was a greater concentration of the carcinoma at the most favored site in the colored race than in the white race, both in general and for cancer of the alimentary tract and the female reproductive organs separately. The proportion of cases not showing secondary or metastatic tumors is somewhat higher in the colored than in the white group. The samples are small, however, and the differences cannot be regarded as statistically significant. In those cases in which secondary or metastatic tumors do occur, the mean number of separate locations of such secondary tumors is somewhat higher in the colored than in the white race, in this experience. The mean age at death of persons showing metastatic tumors at necropsy is from 1 to 3 years lower than it is in persons without such secondary growths, in this experience.

Archives of Physical Therapy, X-Ray, Radium, Omaha

9: 289-336 (July) 1928

Present-Day Status of Physical Methods in Surgical Diseases. G. M. Blech, Chicago.—p. 289.
Electricity in Head Specialties. E. G. Linn, Des Moines, Iowa.—p. 295.
Vital Problems in Teaching Physical Therapy. J. C. Elsom, Madison, Wis.—p. 298.
Effective Ultraviolet. W. T. Anderson, Jr., Newark, N. J.—p. 301.
Methods of Measurement of Ultraviolet Ray Dosage. A. E. Schiller, Detroit.—p. 305.
Constipation. H. W. Sigmond, Crawfordsville, Ind.—p. 311.
Electrical Treatment of Obesity. F. Nagelschmidt, Berlin.—p. 317.

Journal of Cancer Research, New York

11: 301-466 (Dec.) 1927

Interferometer Method in Diagnosis of Pregnancy and Malignant Conditions. G. S. Haynes and C. G. L. Wolf, Cambridge, England.—p. 301.
Quantum Phenomena in Biologic Action of Roentgen Rays. E. U. Condon and H. M. Terrill, New York.—p. 324.
Treatment of Flexner-Jobling Rat Carcinomas with Bacterial Proteolytic Ferments. J. C. Torrey and M. C. Kahn, New York.—p. 334.
Value of Measurements of Intensity of Radiation in Establishing Rational Therapy. T. Marie.—p. 377.
*Chemotherapeutic Attempts with Coal-Tar Derivatives on Spontaneous Mouse Tumors. M. C. Marsh and B. T. Simpson, Buffalo.—p. 417.
Primary Situation of 133 Spontaneous Tumors in Lower Animals. W. H. Feldman, Rochester, Minn.—p. 436.

Value of Chemotherapy of Tumors.—One hundred and forty-five chemical compounds, nearly all found in or derivable from coal-tar, were administered by Marsh and Simpson to mice bearing spontaneous mammary tumors, during an average period of thirty-four days for each case, by intravenous and subcutaneous injection. The compounds were dyes and their antecedents—hydrocarbons, bases, acids and "intermediates" of industrial chemistry—together with a few miscellaneous organic compounds and solvents. The average duration of life after the tumor becomes palpable was about three and one-half months. They were treated therefore through about one third of the clinical course of the disease. All yielded negative results.

Journal of Experimental Medicine, Baltimore

48: 155-313 (Aug. 1) 1928

Fate of Human and Bovine Tubercle Bacilli in Various Organs of Rabbit. M. B. Lurie, Philadelphia.—p. 155.
Agglutination by Precipitin. F. S. Jones, Princeton, N. J.—p. 183.
Effect of Some of Chemical Constituents of Tubercle Bacilli on Protoplasm of Ameba Dubia. P. Reznikoff, New York.—p. 193.
*Relation of Streptococci to Herpes Virus Encephalitis. P. K. Olitsky and P. T. Long, New York.—p. 199.
Studies on Blood Cell Metabolism: I. Effect of Methylene Blue and Other Dyes on Oxygen Consumption of Mammalian and Avian Erythrocytes. G. A. Harrop, Jr., and E. S. G. Barron, Baltimore.—p. 207.
Immunologic Studies in Relation to Suprarenal Gland: III. Effect of Injections of Epinephrine on Hemolysin Formation in Normal Rats. J. Marmorston-Gottesman and D. Perla, New York.—p. 225.
Experimental Study of Diathermy: VI. Conduction of High Frequency Currents Through Living Cell. R. V. Christie, New York.—p. 235.
*Studies on Bacillus Typhosus Toxic Substances: I. Phenomenon of Local Skin Reactivity to B. Typhosus Culture Filtrate. G. Shwartzman, New York.—p. 247.
Studies on Bacteriophage of d'Hérelle: IX. Evidence of Hydrolysis of Bacterial Protein During Lysis. D. M. Hetler and J. Bronfenbrenner, New York.—p. 269.
Id.: X. Toxin Production by Normal and by Phage-Resistant Shiga Dysentery Bacilli. R. S. Muckenfuss and C. Korb, New York.—p. 277.
Fundamental Properties of Fibroblast and Macrophage: IV. Malignant Fibroblast of Jensen Sarcoma. A. Carrel and A. H. Ebeling, New York.—p. 285.
*Reciprocal Agglutination and Absorption of Agglutinin Tests with Fifty-Four Strains of Hemolytic Streptococci Associated with Epidemic of Puerperal Fever. F. L. Meleney, New York, and others.—p. 299.

Relation of Streptococci to Herpes Virus Encephalitis.—Olitsky and Long concluded that streptococci are not the visible form of herpes virus, nor do they produce in rabbits effects like those induced in the brain and cornea by the herpes virus.

Study of Toxic Substances of Bacillus Typhosus.—A phenomenon of local skin reactivity to *B. typhosus* culture filtrates is described by Shwartzman. The reactivity was induced by skin injections of the filtrate followed twenty-four hours later by an intravenous injection of the same filtrate. The local response consisted of severe hemorrhagic necrosis and was fully developed from four to five hours after the second injection. About 78 to 79 per cent of the rabbits employed were susceptible to this phenomenon. Different areas of the skin of the abdomen, when similarly treated, responded with equal severity to the intravenous injection. There were variations in the size of different areas in the same animals. The intensity and size of the local hemorrhagic reactions were not related to the intensity of the erythema produced by the preparatory skin injections. Following intravenous injection very severe hemorrhagic reactions were obtained in those areas which reacted negatively in this respect to the preparatory skin injections. Evidently, the local trauma produced by the preparatory skin injections was not responsible for the localization of the toxic factors introduced by the intravenous route. The mechanism of the phenomenon described has not been fully studied as yet.

Prophylaxis Against Puerperal Fever.—Meleney et al. advise that careful masking of both nose and mouth should be practiced by all those attendants who may come in contact with parturient women just before, during or just after labor. An organism capable of producing puerperal fever may be carried in the nose of one of the hospital staff without causing clinical symptoms of disease.

48: 1-53 (Aug. 1) 1928. Supplement 2

*Etiology of Trachoma. H. Noguchi.—p. 1.

Etiology of Trachoma.—Two distinct varieties of peculiar gram-negative motile bacilli were obtained by Noguchi from four of the five cases of trachoma studied bacteriologically. These bacilli take on a special significance in virtue of the fact that they are able to induce granular conjunctival inflammation on inoculation into monkeys. Because of this property the name *Bacterium granulosis* is being proposed for the organism. Unsuccessful attempts were made to induce trachoma in rhesus monkeys, a chimpanzee, and an orang-utan by direct inoculation of materials taken from the cases of Indian trachoma.

Laryngoscope, St. Louis

38: 439-502 (July) 1928

Ocular Involvement in Sinus Diseases. E. S. Thomson, New York.—p. 439.
Falsetto Voice. R. Ridpath, Philadelphia.—p. 469.
Soundproof Rooms. D. W. Drury, Boston.—p. 472.
Diagnosis of Laryngeal Growths. C. J. Imperatori, New York.—p. 483.
Telephone and Ear. J. A. White, Richmond, Va.—p. 486.
Restriction of Bleeding at Operation. S. B. Wilson, Philadelphia.—p. 492.
Improved Anesthesia for Antrum Puncture by Means of Procaine Hydrochloride Infiltration. M. C. Myerson, New York.—p. 494.

38: 503-568 (Aug.) 1928

Unusual Lesions of Nose and Throat, Including Trichinosis of Tonsil. L. H. Meeker, New York.—p. 503.
Bloodless Tonsil Enucleation. F. P. Herman, West Palm Beach, Fla.—p. 517.
Ocular Involvement in Sinus Diseases. E. S. Thomson, New York.—p. 521.
Question of Blood Shifting in Otogenous Complications. C. K. Gale, New York.—p. 538.
Laryngeal Tuberculosis: Case. L. Daily, Houston, Texas.—p. 543.
Foreign Body in Esophagus of Infant: Case. H. Randall, Binghamton, N. Y.—p. 545.
New Self-Retaining Palate Retractor. F. Hasslinger, Vienna.—p. 546.

Medical Journal and Record, New York

128: 105-152 (Aug. 1) 1928

Hay-Fever in Mexico, Central and South America. W. Scheppegrell, New Orleans.—p. 105.
Insufficiencies in Methods of Control of Certain Respiratory Diseases. D. M. Lewis, New Haven, Conn.—p. 108.
Comparative Study of Epilepsy and Schizophrenia. J. P. H. Murphy, Washington, D. C.—p. 110. (Concl'd.)
Oral Method of Prophylactic Typhoid Immunization. A. L. Garbat, New York.—p. 112. (Concl'd.)
Recurrent Ideas. T. S. Harding, Mount Rainier, Md.—p. 114.
Splint for Fractured or Dislocated Clavicle. H. S. Masland, Philadelphia.—p. 119.
Employment of Liver for Anemias of Early Life. J. P. Griffith and J. P. Scott, Philadelphia.—p. 121.
Birth Paralysis. I. R. Kuhn, New York.—p. 123.
*Successful Herniotomy on Premature Infant. F. Gruneck, Chicago.—p. 125.
Diagnosis, Management and Treatment of Pneumonia in Children. H. Lowenburg, Philadelphia.—p. 126.
Pulmonary Tuberculosis, Juvenile Type, as Related to Tuberculogenesis. C. B. Gibson, Meriden, Conn.—p. 130.
Ocular Conditions in Children. I. S. Tassman, Philadelphia.—p. 134.
Dr. Tertius Lydgate: His Life and Works. L. J. Bragman, Syracuse, N. Y.—p. 137.
At Pedestal of Aesculapius. S. Gordon, Philadelphia.—p. 143.

Herniotomy on Premature Infant.—Gruneck reports a case of strangulated hernia which occurred in a premature infant, born at the seventh month, weighing 1½ pounds (0.7 Kg.). The baby was very asthenic, almost moribund and extremely emaciated, with jaundice and a large left irreducible scrotal hernia. The history revealed that the parents had first noticed the protrusion of the hernia ten days before but had been able to keep the bowels in the peritoneal cavity until fourteen hours before admission to the hospital, when the child began to vomit and the bowel action ceased. Operation was performed the same evening, without anesthesia, and a strangulated scrotal hernia was found. The hernial sac was opened, the constriction released, and the small portion of strangulated bowel, which appeared to be in fairly good condition, was reposited in the abdominal cavity. The external abdominal ring was closed by a purse string suture, without any attempt to remove the distal end of the sac, which was left in the scrotum. Particular attention was paid to the postoperative treatment. The child was kept very warm, was given salt solution subcutaneously every four hours, and was put back to the mother's breast for the following day. Bowel action was stimulated and the child had a good movement the second day. The postoperative temperature was irregular, reaching 105 F. on the third day, but gradually receded to normal by the seventh day. By this time the infant had gained 1 pound (0.5 Kg.) and the jaundice had entirely disappeared. Every effort was made to keep the incision clean, by using a collodion dressing and attaching a urinary bottle to the genitalia. The incision healed by primary intention. The child was discharged sixteen days after the operation, weighing 3 pounds (1.4 Kg.).

New England J. Medicine, Boston

199: 213-254 (Aug. 2) 1928

Specific Prevention and Treatment of Epidemic Poliomyelitis. S. Flexner and F. W. Stewart, New York.—p. 213.
*Sprue: Case Treated with Liver Extract. W. Richardson, Boston, and T. G. Klumpp, New York.—p. 215.
*Pneumococcus Meningitis: Two Fatal Cases Occurring in Newly Delivered Mother and in Her Infant. H. Heinz, New Bedford, Mass.—p. 218.
Sir James Y. Simpson (1811-1870): Prince of Obstetricians. W. P. Coues, Brookline, Mass.—p. 221.

Liver Extract in Sprue.—The case of sprue reported by Richardson and Klumpp showed an extraordinary response to the daily ingestion of an extract of liver effective for pernicious anemia. The result is entirely comparable to that reported of similar patients fed large amounts of whole liver.

Pneumococcus Meningitis in Mother and Infant.—Twenty-five hours after a normal delivery, Heinz's patient complained of severe headache. Temperature, blood pressure and urine were normal. Soon the temperature rose to 103 F. and the woman had two convulsions. She died seventy-nine hours after delivery, her temperature having risen to 107 F. In spite of every effort, a diagnosis was not made. The baby was well until three days after the death of the mother, when the temperature rose to 103 F. by rectum. Physical examination did not reveal anything abnormal and the temperature rapidly returned to normal. Nine days after birth the infant was discharged from the hospital in good health. Two days later the child was returned to the hospital with a complaint of convulsions occurring during the preceding twelve hours. The infant had several more convulsions and expired twelve days after delivery and eight days after the death of the mother.

New Jersey M. Society Journal, Orange

25: 505-562 (Aug.) 1928

Eye Manifestations of Systemic Disease. W. G. Mengel, Camden.—p. 508.
Acute Sinusitis. O. R. Kline, Camden.—p. 511.
Treatment of Varicose Veins. S. Oleynick, Newark.—p. 515.
Ureteral Strictures. L. S. Herndon, New York.—p. 518.
Urokinetic Dilatation of Vesical Sphincter. G. T. Spencer, Elizabeth.—p. 522.
Diagnosis of Acute Surgical Conditions of Abdomen. B. L. Coley, New York.—p. 523.
Significance of Abdominal Pain from Surgical and Medical Standpoint. A. S. V. Giglio, Elizabeth.—p. 527.

New York State J. Medicine, New York

28: 901-962 (Aug. 1) 1928

Parapsoriasis: Simplifying Nomenclature; Classification. F. Wise, New York.—p. 901.
Physical Measures in General Practice: I. Thermal Measures; Diathermy. R. Kovacs, New York.—p. 909.
*Psoriasis: Blood Chemistry Studies: Treatment. B. Throne and C. N. Myers, New York.—p. 914.
*Tube Drainage of Stomach After Abdominal Operations. W. L. Wolfson and B. Kaufman, New York.—p. 920.
Oxygen Therapy in Pneumonia. J. R. Scott and J. S. Davis, Jr., New York.—p. 922.
Transformation of Anatomic Factors of Safety into Elements of Peril. D. Symmers, New York.—p. 926.
Recent Advances in Orthopedic Surgery. P. W. Roberts, New York.—p. 930.
Undulant Fever: Case. W. A. Groat, Syracuse.—p. 933.

Blood Chemistry of Psoriasis.—Thirty-five cases of psoriasis were studied by Throne and Myers. No evidence of nitrogen retention was found in any case. Untreated patients in the early stage of this condition show, as a rule, a normal blood as far as sugar, chlorides, urea nitrogen and uric acid are concerned. Sodium thiosulphate is of no value in the treatment of patients whose blood does not show so-called metallic picture; that is, a high sugar and a low chloride content. Sodium thiosulphate is of great value in those cases showing the metallic blood picture. In cases in which the disease process is present in large sheets or in which it is universal, its action is frequently curative. Nail involvement has also responded to this line of therapy. The action of sodium thiosulphate in these cases is in removing the retained metal from regions in which it has been precipitated and in reactivating it. It also seems to have an action on the accompanying acidosis. Gold therapy is not of any special value in the treatment of psoriasis. The use of gold compounds in this disease should always be preceded by a chemical analysis of the blood. A high blood sugar and a low blood chloride are positive contraindications for gold therapy. The authors believe that psoriasis per se never involves the palms or nails, and that it never occurs in large sheets or becomes universal unless there is a metallic retention. They do not make any claim that arsenic or any of the other heavy metals is concerned with the genesis of psoriasis.

Tube Drainage of Stomach.—Tube passage without lavage is advocated by Wolfson and Kaufman after abdominal operations, because (1) it is more efficacious; (2) it is less cumbersome in preparation and accomplishment; (3) it gives less discomfort to the patient; (4) the danger of aspiration pneumonia is decreased, and (5) tube passage can be used at very frequent intervals.

Ohio State Medical Journal, Columbus

24: 593-672 (Aug.) 1928

Interpretation of Chronic Dyspepsias from Surgical Viewpoint. I. Abell, Louisville, Ky.—p. 611.
Pellagra in North. J. L. Fisher, Youngstown, Ohio.—p. 615.
Chronic Prostatitis. C. H. Garvin, Cleveland.—p. 618.
Herpes Zoster Oticus. L. Ginsburg, Toledo.—p. 624.
Influence of Pathology at City Hospital on Medicine in Cleveland. W. T. Howard, Jr., Baltimore.—p. 628.

Public Health Journal, Toronto

19: 351-400 (Aug.) 1928

Promotion of Rural Public Health in Ontario. J. W. S. McCullough, Toronto.—p. 351.
Milk in Relation to Health. H. M. Speechly, Winnipeg, Man.—p. 363.
Medical Aspects of Immigration. J. D. Pagé, Quebec.—p. 366.
Queen Alexandra Solarium. H. E. Young, Victoria, B. C.—p. 374.
Veterinarian and Public Health. M. Barker, Regina, Sask.—p. 378.

Southern Medical Journal, Birmingham, Ala.

21: 593-682 (Aug.) 1928

Histologic Changes in Mammary Glands of Animals from Inversion of Nipple. W. H. Harris, New Orleans.—p. 593.
*Giardiasis in Children. J. Zahorsky, St. Louis.—p. 595.
Pneumothorax Therapy: Its Value and Apparent Neglect. C. H. Cocke, Asheville, N. C.—p. 598.
Administration of Artificial Pneumothorax. J. W. Laws, El Paso, Texas.—p. 602.
Tuberculosis in Relation to Eye. E. Hill, Richmond, Va.—p. 607.
*Therapeutic Use of Tuberculin in Ocular Tuberculosis. A. C. Woods and B. Rones, Baltimore.—p. 613.
Treatment of Perforative Appendicitis With or Without Abscess. B. C. Willis, Rocky Mount, N. C.—p. 622.
Surgical Drainage. M. D. Ogden, Little Rock, Ark.—p. 626.

Evaluation of Different Factors in Syphilitic Therapy. T. W. Murrell, Richmond, Va.—p. 631.
*Syphilitic Heart Disease with Failure. D. C. Smith and R. D. Kimbrough, Charlottesville, Va.—p. 634.
*Study of Wassermann-Fast Syphilis. L. W. Lord, Baltimore.—p. 636.
Epidemic Encephalitis. C. R. Rayburn, Norman, Okla.—p. 645.
*Use of Glucose in Treatment of Epidemic Encephalitis. L. B. Alford, St. Louis.—p. 649.
Studies with Underweight Children in Fayette County (Kentucky) Schools. F. P. Allen, Lexington, Ky.—p. 654.
Duodenal Tube: Its Use in Surgical Urology. J. F. McCarthy, J. F. Killian and C. T. Stepita, New York.—p. 657.
Cholecystitis and Cholelithiasis in Children. J. A. Beals, Jacksonville, Fla.—p. 666.
Correlation in Teaching During Preclinical Terms. J. T. Halsey, New Orleans.—p. 674.

Giardiasis in Children.—Zahorsky examined the stools of approximately 500 children showing diarrheal tendencies and found ten infected with *Giardia intestinalis*. In older children its presence is not always accompanied by digestive or nutritional disturbance. In infants, however, the intestinal infestation of this parasite produces an increased intestinal peristalsis, a lessening of food absorption, and a consequent retardation in growth. The administration of bismuth salicylate, from 3 to 5 grains (0.2 to 0.3 Gm.) several times a day for a week, repeated several times during six months or more is effective in improving the clinical condition and may remove the parasite permanently.

Tuberculin in Ocular Tuberculosis.—Forty-two patients with ocular tuberculosis have been treated with tuberculin by Woods and Rones. All patients were markedly hypersensitive to tuberculin given intracutaneously. Forty-five per cent of the patients thus treated appear healed, 45 per cent show definite improvement, and 10 per cent are unimproved. The healing is slow, and the greater number of patients classed as "healed" are those treated over several years. About 25 per cent of the patients treated showed recurrence of the local disease. Improvement usually begins early in the tuberculin treatment. These observations indicate that tuberculin therapy is of real value in the treatment of ocular tuberculosis.

Syphilitic Heart Disease with Failure.—Of the fifty-six cases discussed by Smith and Kimbrough, thirty-nine were of negroes, and seventeen of white persons. The average age of the negro patients at admission was 45.8 years, as compared with 52.6 years for the white patients. There were forty-nine male and seven female patients. Fourteen were farmers, twenty were laborers, and the occupations of all the others required considerable physical exertion. There was a positive history of a genital sore in twenty-five cases. The average interval in these from the initial infection to the onset of failure was twenty-two years. The shortest interval was eight years; the longest, forty-one years. Only one case gave a history of early cutaneous lesions. Tabulation of the initial symptoms gave the following results: dyspnea, 29; heart pain, 10; palpitation, 10; substernal pain, 3; weakness, 3; cough, 2; vertigo, 2; headache, 1, and dyspepsia, 1. Some showed more than one initial symptom. Other early symptoms were: edema, 28; dyspnea, 14; heart pain, 12; cough, 12; palpitation, 11; vertigo, 10; weakness, 9; substernal pain, 4; dyspepsia, 3; choking sensation, 3; nervousness, 2; sleep starts, 2; headaches, convulsions, insomnia, cyanosis, hoarseness and "buzzing sound in heart," 1 each. Functionally, twenty-five cases presented both congestive and anginal failure, thirty showed congestive failure alone and one anginal failure alone. Forty-nine of the fifty-six patients had positive blood Wassermann reactions. The thirty-four electrocardiographic tracings did not reveal anything distinctive. The forty-two roentgenographic examinations proved the value of this procedure in determining the structural abnormalities in the heart and aorta. Forty-eight of the fifty-six patients gave no history of antisyphilitic treatment. Twenty-one of the fifty-six patients are known to be dead, eighteen are known to be alive, and the condition of seventeen is unknown. Of the eighteen alive, thirteen are improved and five are unimproved. In the group of twenty-one dead, the average interval from the onset of failure to death was 3.2 years. The average interval since onset of failure in those alive and heard from is 4.1 years.

Wassermann-Fast Syphilis.—Of 118 patients fulfilling the criterion of Wassermann-fastness, fifty-six showed active syphilitic disease in spite of one year or more of regular and active treatment. In fifty-eight more, serious injury due to *Spirochaeta pallida* was demonstrated, although the activity of the disease process could not be proved beyond a doubt. There were only four, or 3.5 per cent, in whom no evidence of serious injury could be found. There were no cases of primary or uncomplicated secondary syphilis whose Wassermann reaction remained positive at the end of one year of regular and active treatment. Lord interprets these observations to signify that a fixed positive blood Wasesrmann reaction persisting in spite of regular and active treatment means continued activity of the syphilitic disease in the patient presenting this reaction.

Dextrose in Treatment of Epidemic Encephalitis.—In general, Alford says, results were best in the more acute cases and least favorable in Parkinson and other syndromes in which actual destruction of tissue can be assumed to have occurred. The usual method of administration by vein consisted of the use of 10 per cent solution, in amounts beginning at 150 cc. and running up to 500 cc. The injections were given daily or as nearly so as was possible, and, if it was feasible, fifteen injections were given. In oral administration, from 1 to 2 ounces (30 to 60 cc.) was given three times a day. Oral administration always accompanied the intravenous method and was continued for an indefinite time. If the solution was right, no bad effects were observed even in the most desperate cases. If kept for a day or two or resterilized, toxic by-products, perhaps acids, are formed and severe reactions are obtained. Alford is certain that acid formation is usually the cause of reaction, but sometimes, apparently, there is something wrong with the water still which permits foreign substances to enter the water. Reactions may be severe and, in one of Alford's cases, the reaction hastened the end.

U. S. Veterans' Bur. M. Bull., Washington, D. C.

4: 653-735 (Aug.) 1928

*Unconscious Symbolism Exemplified in "New Language." J. H. Baird, Chillicothe, Ohio.—p. 653.
Tuberculous Abscess. L. T. Ferrell, Fort Bayard, N. M.—p. 660.
Prognosis in Pulmonary Tuberculosis. G. H. Crofton, Washington, D. C.—p. 667.
Allergy in Disease. H. A. Callis, Tuskegee, Ala.—p. 671.
Surgical Management of Peptic Ulcers. G. E. Pfeiffer, Tacoma, Wash.—p. 675.
Psychometric Methods. G. V. N. Dearborn, Bronx, N. Y.—p. 684.
Comparative Study of Kahn and Complement Fixation Tests of Spinal Fluid. A. Rabinovitch and C. G. Roberts, Bronx, N. Y.—p. 692.
Water Waste. E. W. Hunter and S. L. Dorsey, Washington, D. C.—p. 697.
Method for Uniform Marking and Positive Identification of Roentgen-Ray Films. E. R. Zevin, Waukesha, Wis.—p. 700.
Chief of Dental Clinic. W. W. Curtiss, Washington, D. C.—p. 702.
Posttraumatic Aphasia. J. A. Nelson, Washington, D. C.—p. 706.
Application of Ultraviolet Ray in Severe Case of Dermatitis. C. Bates, Aspinwall, Pa.—p. 709.
Nursing Care of Tuberculous in Hospitals of United States Veterans' Bureau. H. K. Smith, Livermore, Calif.—p. 717.
Occupational Therapy and Agriculture in United States Veterans' Hospitals for Calendar Year 1927. H. J. Kefauver, Washington, D. C.—p. 721.

Unconscious Symbolism Creates a New Language.—Baird reports a case belonging to the schizophrenic group, in which religiosexual characteristics predominate and in which the construction of a "new language" bearing striking similarities to ancient symbols occupies a prominent place in the clinical picture.

West Virginia Medical Journal, Huntington

24: 369-424 (Aug.) 1928

Acute Transverse Myelitis. W. E. Vest, Huntington.—p. 369.
Experiments with Peptic Ulcer: Their Production and Healing. C. B. Morton, University, Va.—p. 374.
Early Diagnosis of Tuberculosis in Adult. J. G. Pettit and G. F. Evans, Hopemont.—p. 377.
Infantile Diarrhea. W. B. Hunter, Huntington.—p. 382.
Infant Feeding. K. M. Jarrell, Beckley.—p. 385.
Surgical Treatment of Perforated Peptic Ulcer. A. G. Rutherford, Welch.—p. 389.
Infant Feeding. G. G. Hodges, Kilsythe.—p. 392.

Wisconsin Medical Journal, Milwaukee

27: 349-396 (Aug.) 1928

Aim of Medical Psychology. A. M. McIntire, Milwaukee.—p. 349.
Bronchomycosis: Two Cases. W. D. Stovall, Madison.—p. 353.
Juvenile Delinquency. R. E. Bushong, Milwaukee.—p. 358.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2: 87-138 (July 21) 1928

Nasopharyngeal Epidemics in Public Schools. J. A. Glover.—p. 87.
*Treatment of Burns and Scalds by Tannic Acid. W. C. Wilson.—p. 91.
Sickness Absenteeism. M. Culpin and M. Smith.—p. 95.
*Fulminating Dysentery in Child Caused by B. Dysenteriae Sonné. W. H. Evans.—p. 96.
*Limitations of Agglutination Reaction in Diagnosis of Bacillary Dysentery. J. Menton.—p. 97.
Pathogen-Selective Cultures as Aid to Diagnosis of Infective Foci. E. C. Lowe.—p. 98.
Perthes' Disease of Hip: Case. T. G. Evans.—p. 100.
*Unusual Cause of Pain and Hematuria. F. Harvey.—p. 101.
Thymoma Simulating Abdominal Tumor. W. Brown.—p. 101.
Tabes Dorsalis and Gummata of Testes. J. Gabe.—p. 102.
Extensive Epithelioma of Cheek and Lower Jaw Treated by Diathermy. W. J. Harrison.—p. 102.

Treatment of Burns by Tannic Acid.—Fifty cases of burns have been treated with tannic acid by Wilson. It has been shown that this method of treatment promotes rapid analgesia; there is complete absence of pain and discomfort while the coagulum is present, and during this time there is no necessity for dressing. In many cases tannic acid prevents acute toxemia and invariably lessens the severity of this phase when it develops. The prognosis as to life, especially in children injured by extensive burns, is thus greatly improved. Sepsis is usually avoided in superficial lesions treated with the tannic acid method, and when sepsis occurs in deeper lesions it does so late in the course of the case and is of a mild degree. Scarring is probably less marked than in other forms of local treatment on account of the protection afforded to the growing epithelium, the diminution of sepsis, and, hence, the minimization of granulation tissue which is the precursor of scar. The death rate from burns in this series was 8 per cent; the figure compares very favorably with any which have been quoted from the results of treatment by other methods. A prognosis based on the extent of the injury is considerably influenced by the tannic acid treatment. The outlook in children is not necessarily grave even if 40 per cent of the entire surface of the body is affected. Tannic acid can be conveniently kept in powder form, made up in packets containing 110 grains (7.15 Gm.). One such packet dissolved in half a pint of water gives a 2.5 per cent solution.

Fulminating Dysentery in Child.—Evans' case is exceptional in regard to the severity of the symptoms and the rapidity with which death was brought about. The patient, aged 10, was a strong and apparently robust school boy. He went to school as usual in the morning, and at 10:30 a. m. vomited. He was sent home, and at 2 p. m. severe and frequent diarrhea began, persisting until the evening, when the child appeared so ill that at 10 p. m. he was taken to the hospital. Death occurred at 3 a. m., sixteen and a half hours after the onset of the first symptoms. Cultures from the contents of the large intestine and from the ileocecal lymphatic glands yielded abundant and almost pure growths of the Sonné bacillus, but cultures from the contents of the ileum, spleen and heart blood was negative.

Serodiagnosis of Dysentery.—Menton's experience with 120 cases has convinced him of the unreliability of the agglutination reaction. Owing to lack of any correlation between the day of disease and the appearance of agglutinins a negative agglutination reaction, even if shown by several affected patients, does not exclude bacillary dysentery. If the serums from a number of patients are repeatedly examined for the presence of agglutinins, it is often possible in the event of positive reactions to place the cases in the main Shiga or Flexner group, and such results may be further refined by absorption tests on these serums with known dysentery bacilli, but for exact work isolation of the causative micro-organism from the patient is essential. The possibility of the multiplicity of types of Flexner's bacillus in an outbreak is again established, but it has not been settled whether the lack of correspondence between the agglutinins as found in some of the patients' serums and the type of bacillus recovered from the feces was the result of a double infection or the outcome of the close relationship of the W and V strains. The possibility of intermediate strains must also be borne in mind, but further work in this direction is necessary.

Encrusted Ligature in Bladder Causes Pain and Hematuria.—A woman, aged 49, stated that she had suffered from severe pain on micturition from the day of her operation (hysterectomy) performed six months previously. The pain was paroxysmal in character and was worse after micturition, with occasional hematuria. For six weeks after the operation the pain was very severe, but after that time it became gradually less severe and almost entirely disappeared when the pain returned and persisted. The patient stated that she suffered from an aching pain, lasting from five to ten minutes after micturition, and that lying down eased the pain. There was no increased frequency. The urine on examination was "smoky," and microscopically red blood cells and many triple phosphate crystals were seen. The mucous membrane of the bladder was healthy. About half to three fourths of an inch above the right ureteral orifice the ends of a ligature could be seen projecting into the bladder, like a villous papilloma. The ligature was coated with crystals. With ureteral forceps, used through an operating cystoscope, Harvey removed the ligature without much difficulty. This was followed by a moderate amount of hemorrhage. In withdrawing the ureteral forceps the ligature was dropped in the bladder; but was voided by the patient shortly afterward. Since the removal of the ligature, the patient has been quite free from pain and has had no recurence of the hematuria.

Journal of Pathology and Bacteriology, Edinburgh

31: 445-596 (July) 1928

*Fate of Colloidal Iron Administered Intravenously. C. J. Polson.—p. 445.
Study of Virus III: Response of Immunized Rabbits to Reinoculation. C. H. Andrewes.—p. 461.
Normoblast, Reticulocyte, Erythrocyte. F. C. O. Valentine.—p. 473.
Gram-Negative Cocci in Nasopharynx: Classification. S. P. Wilson.—p. 477.
*Cerebral Gliomas. E. A. Carmichael.—p. 493.
*Continued Fever Due to B. Alkalescens (Eberthella Alkalescens) Andrewes. J. Smith and A. M. Fraser.—p. 511.
Temperature of Normal Rabbits. P. Lazarus-Barlow.—p. 517.
Occurrence of Multiple Zones in Serum Precipitation Reaction. N. E. Goldsworthy.—p. 525.
Observations on Part Played by Alcohol in Wassermann Reaction. C. H. Browning and E. M. Dunlop.—p. 541.
Thrombo-Angiitis Obliterans: Case. R. O. Girdwood.—p. 549.
*Gastro-Intestinal Flora in Pernicious Anemia. L. S. P. Davidson.—p. 557.
Tuberculosis in Dog Due to Infection with Bovine Virus. G. S. Wilson and R. Lovell.—p. 583.
Gummata of Aorta with Rupture into Pericardium. R. J. Wright-Smith.—p. 585.
Gumma of Heart-Wall in Infant. J. W. S. Blacklock and J. A. W. M'Cluskie.—p. 586.
Bacillus Enteritidis Infection in Wild Rats. J. C. Kerrin.—p. 588.
Simple Apparatus for Filtering Small Amounts of Fluid. D. L. Johnston.—p. 590.
Cultivation of Organism from Spleen in Case of Banti's Disease. A. A. F. Peel.—p. 591.

Fate of Colloidal Iron Administered Intravenously.—Polson says that, after the intravenous injection of colloidal iron into rabbits, the greater part of it is held in the lungs, liver and spleen. In the lungs, the greater part of the iron is present as emboli in the vessels; in the liver and spleen it is ingested by the endothelial cells. The lung iron is removed from the vessels by phagocytic cells which are believed to be derived from lung epithelium. When the Kupffer cells are charged with iron they tend to be detached from the capillary walls and congregate in the lumens; later they appear to fuse and form large multinuclear giant cells, like foamy "foreign body" giant cells. Iron enters the liver cells only later and is transferred from the Kupffer cells, none passing directly to the liver cells. Aggregation of the splenic phagocytes occurs and by the end of the second week the cells degenerate, leaving granular depôts of iron in the splenic pulp. While embolism of the kidney glomeruli may be an immediate result, iron is not found in the epithelium of the tubules until the end of the second week unless the tubules have been previously injured. There is some evidence of an increase in the bone marrow content of iron. Iron appears to accumulate in the thoracic and abdominal lymphatic glands and in the cecum, which excretes it. The iron in the other organs is scanty and is restricted to the endothelial cells of the capillaries for the most part. The chemical examination shows that the amount of iron held by the lungs after a

single dose of iron is dependent on the degree of pulmonary embolism. Afterward there appears to be a transfer of iron from the lung to the liver; there is no evidence to show how this occurs.

Classification of Cerebral Gliomas.—Sixty-two cerebral gliomas were examined histologically by Carmichael. The classification suggested by Bailey and Cushing was found applicable. A simpler classification into two large groups is suggested: (*a*) spongioblastic tumors; (*b*) astroblastic tumors. These two groups show definite pathologic and clinical differences.

Fever Due to Bacillus Alkalescens Andrewes.—Smith and Fraser report the first case of continued fever due to *B. alkalescens*. A woman, aged 20, was confined, Nov. 13, 1927. Labor was uncomplicated and she remained well until the 15th, when she had a rigor and pyrexia. She was admitted to the hospital with a temperature of 103 F., pulse rate of 128, and respiration rate of 30 per minute. She was extremely toxic in appearance. The heart did not show any abnormality. The chest showed diminished movement on the right side with slightly impaired resonance over the right lower lobe anteriorly and posteriorly. Breath sounds were higher pitched than usual, but no definite pneumonic or pleuritic process was demonstrable. The abdomen was grossly distended, and tenderness of the tubal regions was elicited only on deep palpation. Rigidity was not present in any area, and enlargement of the liver or of the spleen was not demonstrated. The uterus was involuted, the os being somewhat patulous and the discharge blood-stained. The parametrium was normal. A perineal tear 1 inch long was evident. Urinary symptoms were absent. Four days after the initial symptoms, marked generalized icterus developed; the other features remained as formerly. The fifth day persistent hiccup was a distressing feature and stools were loose. Tonsillitis due to *Streptococcus hemolyticus* also developed. The general condition remained unchanged during the next three days except that there was slight increase in pain in the tubal regions and a suspicion of fulness in the right fornix. A transient albuminuria developed and there occurred a considerable degree of anemia. The red blood cells showed anisocytosis, poikilocytosis, polychromasia and punctate basophilia, while a differential leukocyte count gave 66 per cent of neutrophil polymorphonuclears, 4 per cent of mononuclears, and 30 per cent of small lymphocytes. November 24 there was evident improvement; the icterus had begun to disappear and the abdominal distention to subside and, notwithstanding the continued pyrexia, the patient felt considerably improved. Throughout the febrile period of some three weeks' duration the patient had a typical remittent fever. Following the completion of defervescence, the patient's convalescence was rapid and uninterrupted. A blood culture taken on admission and another made later showed a gram-negative nonmotile, nonlactose fermenting bacillus. The feces, the urine and a swab of the blood-stained secretions from within the uterus were found to contain the same organism. A culture made several weeks later remained sterile. The patient's blood serum was tested for its agglutinative action on a blood, a urinary and a fecal strain of the infecting organism and intestinal bacteria. It proved to be *B. alkalescens* Andrewes.

Gastro-Intestinal Flora in Pernicious Anemia.—No evidence was found by Davidson to indicate that any individual type of organism was specifically related to pernicious anemia, or that bacterial hemolysins are of etiologic importance in the disease. A great numerical increase of organisms, normal inhabitants of the bowel (e. g., *B. coli*, streptococci and especially *B. welchii*), was found to occur in the gastro-intestinal contents in cases of pernicious anemia. No evidence was found that these organisms differed quantitatively from those found in healthy persons. The great quantitative increase of bacteria, especially at levels of the small intestine which in normal persons are relatively bacteria-free, is believed to be a factor of great etiologic importance.

Lancet, London

2: 105-156 (July 21) 1928

Medical and Nursing Service. L. Mackenzie.—p. 105.
*Radium Treatment of Primary Carcinoma of Breast. G. Keynes.—p. 108.
*Postoperative Massive Collapse. C. R. Boland and J. E. Sheret.—p. 111.
*Radium Treatment of Vesical Carcinoma. A. C. Morson.—p. 116.
*Tetanus Treated by Intracisternal Injection of Antitetanic Serum. S. E. Denyer.—p. 119.
*Recovery from Amyloid Disease. G. F. Walker.—p. 120.
Lymphogranuloma with Generalized Metastases. B. B. Yodh and S. R. Joglerkar.—p. 121.

Radium Treatment of Primary Carcinoma of Breast.—Keynes reports the results obtained in forty-two cases of primary breast cancer treated only by the insertion of radium needles. All of these cases were proved by histologic examination to be carcinoma. The operability was as follows: inoperable, seventeen; operable, twenty-two; doubtful, three. Of the inoperable class, six patients died of metastatic growths. None of these lived more than nine months after treatment, though all had shown local improvement and in two the primary growth had entirely disappeared. One (the only male) died of intercurrent disease after having been apparently cured for one year and seven months. In one case reckoned operable, though very unfavorable, the patient died of septicemia some weeks after local removal of the breast following two radium treatments, the carcinoma having recurred outside the area treated. Of the thirty-four patients that are alive, two are known to have metastases in bones and four have recurrences. In two the recurrences are in the area treated, in two outside it. Of the twenty-eight patients that remain, thirteen are apparently cured; in one patient the tumor is almost gone; two patients are grealy improved; seven are improving. Five cases are too recent to discuss. In seven of the cured cases from one year and five months to four years have elapsed since treatment. Of the thirteen cases in this category there were: inoperable, six; doubtful, one; operable, six. Among the four longest "cures" (two years and upward), three patients were "inoperable." One of these (two years) had a large growth with a secondary mass filling the axilla. Radium was applied three times.

Postoperative Massive Collapse.—Among 410 cases in which abdominal operations were performed, there were sixty-three cases of pulmonary collapse, an incidence of 13.7 per cent. Males were more affected than females, and upper abdominal operations were more numerous than lower. Cardiac displacement was present in six of these sixty-three cases. Boland and Sheret believe that massive collapse is due to obstruction of the lumen of the bronchi, followed by absorption of the contained air by the blood stream. This obstruction most often affects the larger tubes, but when the incision has been in the upper abdomen the deflation of the lower lobe is so great that the bronchioles may become primarily obstructed. The predisposing causes are the catarrh that follows an anesthetic, the position in which the patients are nursed, and the inhibition of the cough reflex by pain or the excessive use of morphine. The clinical features, complications, pathology and diagnosis of massive collapse are described. Certain measures of treatment are advised, with especial reference to postural drainage.

Radium Treatment of Vesical Carcinoma.—Morson is convinced that vesical carcinoma, in our present state of knowledge, cannot be cured by radium irradiation, but a shrinkage of the tumor, even to apparent disappearance, may be expected. Severe hemorrhage can be controlled, and therefore an improvement in the general state of health will follow.

Tetanus Treated by Intracisternal Injection of Antitetanic Serum.—Denyer reports a case of tetanus in which 192,000 units of antitetanic serum were given by intracisternal injection. The intracisternal injection seemed to have a more marked effect on the spasm of the jaws than on the other muscles, and the improvement in general well being was due to being able on this account to take more nourishment, as well as to a great reduction in the toxic condition.

Recovery from Amyloid Disease.—In Walker's case a postpneumonic empyema was the cause of extensive amyloid disease of the liver and spleen. The patient was 4 years of age. His condition became rapidly worse. About three years after he was first seen, a thoracoplasty was done. Immediate improvement in the condition resulted. Eight years after the operation the liver and spleen could not be palpated, nor could any signs of amyloid disease be detected. The left side of the chest was completely stove in and there was a slight compensatory scoliosis, but remarkably little postural deformity was visible when the boy was clothed in a loose shirt, and there was still less physical disability. No evidence of activity in the left lung could be heard, but the right lung was hypertrophic.

Gazette Hebdomadaire des Sciences Méd. de Bordeaux

49: 433-448 (July 8) 1928

*Melanoma of Tibia. C. Lasserre.—p. 441.
Pseudarthrosis of Femur. A. Chenut and A. Peyre.—p. 443.

Melanoma of the Tibia.—Lasserre describes a case of melanoma of the tibia in a woman, aged 55. Beginning one year after a trauma, her right leg had increased progressively in volume for two years. From the beginning the swelling had caused severe paroxysms of pain which occurred about every two weeks, particularly at night. When examined by the author, the patient was emaciated and extremely weak. The right tibia was greatly increased in volume, and the pain, which she localized in the center of the middle portion of the bone, was violent. The skin over the tibia was hot, red, infiltrated and painful. Deep pressure revealed marked hypersensitiveness. The bone presented a spindle-shaped enlargement of its middle portion. A radiogram showed sclerosis of the cortex with periosteal reaction. The clinical picture was that of chronic osteomyelitis in a state of acute exacerbation. Antistaphylococcus vaccines were administered, but they were without effect. When the medullary cavity of the bone was opened, no pus was found, but a black tracery in the bone tissue was noted. The operation relieved the patient of pain for two months, but at the end of that time she returned presenting about the same clinical picture as before the operation. From pieces of bone removed at biopsy a diagnosis of melanoma was made and amputation at the lower third of the thigh was performed. On questioning the patient, it was learned that six years previously she had had a small black tumor removed from her face.

Lyon Médical, Lyons

141: 633-664 (June 3) 1928

*Ankylostomas in Mines. C. Garin, Doubrow and Mounier.—p. 633.
*Development of Larvae in Uterus of Dead Female Ankylostomas. C. Garin, Doubrow and Mounier.—p. 634.
Impetiginous Stomatitis. J. Gaté and Aulagnier.—p. 636.

Occurrence of Live Ankylostomas at the Bottom of an Infested Mine.—In examinations of the soil and water and the molds developing on the wooden supports in the passages of a mine, Garin et al. found a large number of living ankylostoma larvae. None were found in the water in the drains and only a few were found in the dirt; nearly all were found in the roof of the passages on the moist, moldy wood 2 meters above the floor. Most of the larvae were large and active; this is the type of larva which, when brought into contact with the bare human skin, perforates and enters it.

Therapy of Hookworm Disease.—Twenty-four hours after placing dead female ankylostomas in an incubator, Garin et al. observed numerous moving larvae in their bodies. During the following days these larvae enlarged, apparently deriving their nourishment at the expense of the viscera of the dead mothers. The complete evolution of the larvae up to the filariform stage was observed. The authors believe that this fact explains the occurrence of larvae in the stools after the expulsion of most of the dead females under the influence of an anthelmintic and a purge: a few of the dead females remain in the folds of the intestinal mucosa and from these, larvae escape several days later. It is even probable that these larvae can penetrate the intestinal mucosa directly and reinfect the patient, thus producing a veritable internal cycle of autoinfection. This would explain the insurmountable difficulties of radically curing ankylostomiasis. In consideration of these facts, not only one purgation, but two or three purgations and enemas should be used, so as to cause the expulsion of the largest number possible, if not all, of the females poisoned by the vermifuge.

Presse Médicale, Paris

36: 849-864 (July 7) 1928

Bile Salt Content of Urine, Blood-Serum and Duodenal Juice. E. Chabrol, H. Bénard and M. Bariéty.—p. 849.
*Periarterial Sympathectomy in Osteo-Articular Tuberculosis. A. L. Floresco.—p. 852.

Indications for and Results of Periarterial Sympathectomy in Osteo-Articular Tuberculosis.—In 1922 Floresco first applied sympathectomy to the treatment of osteoarticular tuberculosis. During the intervening six years the indications for this operation have become fewer owing to the fact that the results have frequently been unsatisfactory. The author now believes that: 1. Sympathectomy does not exclude the other methods of treatment of tuberculous arthritis. Immobilization before and after the operation, and until cure, remains the essential part of the treatment. 2. The second great principle which dominates the indications for sympathectomy in this field is that the operation can have only limited indications because it has no specific action on the lesion itself. These two general principles define the rôle and the importance of sympathectomy in the treatment of osteo-articular tuberculosis; this must be kept in mind in all applications of sympathectomy for this condition. To demand more exposes the operation to certain failure.

36: 865-880 (July 11) 1928

Rôle of Spleen in Respiratory Disturbances. L. Binet.—p. 865.
*Preventive Vaccination Against Tuberculosis. G. Poix.—p. 868.

Results of Seven Years of Preventive Vaccination Against Tuberculosis.—According to Poix, the Pasteur Institute has, during the past seven years, sent out more than 300,000 doses of B C G vaccine. In spite of this large number of vaccinations not a single accident has been reported. Even disturbances in digestion or in growth have not been observed. Several times, however, a slight micropolyadenitis has been noted, but this has always disappeared after from two to three weeks and has had no effect on the general condition of the infant. A study of the records of 3,808 vaccinated infants under 1 year of age and living in a tuberculous environment shows a general mortality of 3.1 per cent, whereas the mortality for nonvaccinated infants, regardless of the environment, is 8.5 per cent. For infants aged from 1 to 3½ years and exposed to familial contagion the tuberculosis mortality among the vaccinated is only 0.2 per cent, whereas among the nonvaccinated infants of the same age it is seven times as great. As yet it is impossible to state with certainty just what is the duration of the immunity conferred by B C G vaccine. The author deems that all new-born infants should be vaccinated. The subcutaneous route, however, should be reserved for especially organized tuberculosis clinics and at the present time only the oral route for administering the vaccine should be used by the general practitioner. This limits the use of B C G vaccine to the first ten days of extra-uterine life, because it has been shown that the digestive mucosa is permeable for bacilli only during the first few days of life and that this permeability becomes contingent in adolescents and adults.

Schweizerische medizinische Wochenschrift, Basel

58: 669-692 (July 7) 1928. Partial Index

"Transport" Plastic Operations. H. Matti.—p. 669.
Cholecystectomy: One Hundred Cases. H. Iselin.—p. 673.
*Incision in Appendectomy. H. Iselin.—p. 675.
Osteosclerosis Fragilis Generalisata. W. Lauterburg.—p. 677.
*Rectal Hypersensitiveness in Abdominal Injuries. W. Odermatt.—p. 684.
Pseudomyxoma. E. Kummer.—p. 684.

Buttonhole Incision Versus McBurney Incision in Appendectomy.—Iselin uses McBurney's incision so modified as to permit the introduction of the entire hand into the abdominal cavity. His reason for using this incision is that he considers speed in removing the appendix to be less important than thoroughness in examining the other abdominal viscera. He has so frequently found adnexal adhesions, gallstones, duodenal ulcer, floating kidney and various other conditions in cases diagnosed as appendicitis that he considers inadvisable an incision which permits no exploration of the abdomen, even if it does permit one to remove a normal appendix in only five minutes.

Rectal Hypersensitiveness in Abdominal Injuries.—On the basis of its absence in three cases of severe intra-abdominal injury which would have been lost if operation had not been performed, Odermatt warns the general practitioner against relying too much on rectal hypersensitiveness as a sign of abdominal injury.

Archivos Arg. de Enf. d. Ap. Digest., etc., Buenos Aires

3: 369-504, 1928

*Problem of Peptic Ulcer and Cancer. F. Moutier.—p. 369.
Amebic Hepatic Abscess Cured by Emetine. J. R. Goyena and A. Dagnino.—p. 387.
Obesity. F. Umber.—p. 403.

Intestinal Spasms: Radical Treatment. A. Furno.—p. 416.
Histopathology of Syphilis of Liver. J. L. Carrera.—p. 430.
Carotinemia with Carotinoid Pigmentation of Skin. T. Hernando.—p. 448.

Cancer in Gastric and Duodenal Ulcers.—In Moutier's experience, 11.02 per cent of ulcers underwent cancerous degeneration. Taking into account the clinical and anatomicoclinical data of 1,200 cases of ulcer and cancer, the percentage of ulcers that undergo cancerous degeneration is from 6 to 7. Cruvelhier's cancerous ulcer is a reality. Prophylaxis of cancer of the stomach depends undoubtedly, up to a certain extent, on the true healing of the round ulcer. If medical treatment fails, surgery should be resorted to.

Archiv für Gynäkologie, Berlin

134: 193-438 (June 26) 1928

Rationalization of Support of Perineum. R. T. von Jaschke.—p. 193.
*Caffeine in Human Milk. E. Schilf and R. Wohinz.—p. 201.
Etiology and Treatment of Pyelitis of Pregnancy. J. Hofbauer.—p. 205.
Streptococci in Uterine Carcinoma. H. Dehler.—p. 228.
Life and Growth Processes in Explanted Human Tissues and Tumors. K. Heim.—p. 250.
Actinomycotic Parametritis and Its Origin. H. Barth.—p. 310.
*Blood Potassium in Menstrual Cycle. R. Spiegler.—p. 322.
*Endocrine Function of Uterus. R. Zimmermann.—p. 328.
Lipoma of Uterus. H. Thaler.—p. 350.
Connection Between Shape of Head and Course of Labor. E. Wehefritz.—p. 353.
Heterogenic Epithelium of Ovary in Childhood. Y. Akagi.—p. 390.
Characteristics of Serum of Women with Cancer. H. Guthmann and H Frühauf.—p. 425.

Occurrence of Caffeine in Human Milk After Ingestion of Coffee.—About 1 per cent of the amount of caffeine that was contained in the coffee ingested appeared in the milk of the women studied by Schilf and Wohinz.

Blood Potassium in Menstrual Cycle.—The average blood potassium values in the thirty-six women examined by Spiegler show a rise in the premenstrual period and a considerable fall during the menses, followed by a gradual return to normal.

Endocrine Function of Uterus.—Zimmermann removed the uterus from twenty-two adult rabbits and examined the ovaries at intervals up to fourteen months. Degenerative changes were apparent in the ovulation apparatus. The interstitial gland increased enormously in size, obviously the result of precipitate and massive maturation of follicles, which, however, soon degenerated. Zimmermann concludes that the normal uterus has a stimulating effect on the ovaries and that when this influence is removed they cease to function physiologically and degenerate morphologically.

Archiv für Schiffs- und Tropen-Hygiene, etc., Leipzig

32: 335-382 (July) 1928

Carbon Dioxide Snow Treatment of Leprosy, Followed by Chemotherapy. A. Paldrock.—p. 335.
Demonstration of Plasmochin in Urine. I. Achundow.—p. 347.
Method for Removing Mucus from Rectal Ampulla to Examine for Worms. A. P. Schachmatow.—p. 352.
Exciting Organism of Infectious Anemia of Rats. A. Metelkin.—p. 355.
*Malaria and Asthma. E. Thonnard-Neumann.—p. 358.
*Mite Fever (Ketani or Tsutsugamushi Disease). B. M. van Driel.—p. 363.
Intracutaneous Reaction in Leishmaniasis. I. C. Ray.—p. 369.
Measurement of Spirochetes. H. Ruge.—p. 376.

Malaria and Asthma.—Thonnard-Neumann reports that in the flat coast district of Haiti in which he practices asthma is frequent. Stagnant water is abundant and malaria is endemic. In a study of twenty-one cases of asthma, he found that they fell into two groups: In the first group, with a high average age, the asthma recurred year by year at the end of the rainy season when the hitherto prevailing sea wind gives place to a land wind. Only about a third of these patients had malaria; treatment of the malaria had no influence on the asthma in these cases. In the second group of patients, the oldest of whom was 42 years old, the asthma was not connected with a particular season. In all of these patients malaria was present, and in all treatment of the malaria cured the asthma.

Mite Fever (Ketani or Tsutsugamushi Disease).—The case recorded by van Driel occurred in a Javanese workman on a Sumatran tobacco plantation. The onset was with fever and severe headache. A typical ulcer marked the site where, a week before the onset of symptoms, he had been bitten by a mite. The spleen was enlarged, there was an indistinct maculopapular exanthem on the trunk and signs of pneumonia were present in both lungs. After a few days the clinical picture of acute paralysis agitans was added. The patient was wholly helpless and unable to sleep. After about ten days he began to improve and twenty-six days after the beginning of his illness his eyes were examined in the dark room. The observations corresponded with Haab's picture of neuroretinitis specifica: indistinctness in outline and redness of the papilla nervi optici, dilatation of the veins, choroiditis and descemetitis. Vision was diminished in both eyes. During his illness the patient had made no complaints of disturbed vision. Improvement continued, the eye symptoms retrogressed and the man was discharged with slight tremor of both hands. The author counsels examining the eyes in all infectious diseases.

Deutsches Archiv für klinische Medizin, Leipzig

160: 1-128 (June) 1928

*Chronic Embolism of Pulmonary Artery? M. Ljungdahl.—p. 1.
*Chlorine Metabolism in Tuberculosis. P. Müller and H. Quincke.—p. 24.
Bacillus Symbiophiles (Schottmüller) as Cause of Pylephlebitis Following Appendicitis. E. Nedelmann.—p. 40.
The Heart in Hypertonia and Arteriosclerosis. F. Lange and E. Wehner.—p. 45.
The Liver and Mineral Metabolism. K. Beckmann.—p. 63.
Conservative Treatment of Chronic Inflammatory and Purulent Processes in the Lungs. E. Hellmann.—p. 85.
Plasmalogen Content of Human Serum. K. Imhäuser.—p. 109.

Chronic Embolism of Pulmonary Artery?—Ljungdahl reports the cases of two women, who suffered for years with dry cough. Dyspnea developed and grew continually worse, then came cyanosis, palpitation of the heart and finally symptoms of cardiac insufficiency, edema, ascites, etc., with fatal termination. In each case necropsy showed obstruction of the pulmonary artery by thrombus, dilatation of the central section of the pulmonary artery, as well as marked dilatation and hypertrophy of the right side of the heart, while the valvular apparatus was entirely intact. Lungs and bronchi appeared normal. The author thinks that in all probability a stenosis of the pulmonary artery was present during life, but whether the stenosis was caused by a thrombus cannot be ascertained. He finds it difficult to explain the cough in the absence of pulmonary or bronchial changes. A similar cough was observed in a case of long-continued mitral stenosis.

Chlorine Metabolism in Tuberculosis.—As the result of a comparative study of the chloride content of tuberculous and normal cadavers, Müller and Quincke found that there was a great increase in the percentage of chlorides in the skeletal muscles in tuberculosis. Since the authors had previously ascertained that there was a decrease of chloride in the blood in tuberculosis, it would appear that the chloride lost by the blood was taken up by the skeletal musculature. Such an interchange, however, cannot yet be assumed as an actual fact. The fact that neither in pneumonia nor in uremia is there any change from the normal as regards chloride would seem to indicate that the chlorine metabolism in tuberculosis is specific for that disease.

Deutsche medizinische Wochenschrift, Berlin

54: 1067-1110 (June 29) 1928. Partial Index

*Therapeutic Uses of Hunger and Undernutrition. P. F. Richter.—p. 1067.
Arsenic Hypothesis in Haff Disease. G. Lockemann.—p. 1071.
*Primary Lymphangitis of Appendix. A. Borchard.—p. 1074.
Diagnosis and Operative Treatment of Horseshoe Kidney. M. Zondek.—p. 1075.
Subcapsular Renal Hematomas. H. Haebler.—p. 1078.
*Infrequency of Carcinoma of Stomach After Gastro-Enterostomy for Ulcer. G. Wolfsohn.—p. 1079.
Morphinism and Its Treatment. H. Brauns.—p. 1080.
Ether Addiction. E. Joël.—p. 1081.
Results of Chemotherapy in Pediatrics. De Rudder.—p. 1083.
Blood Proteins in Childhood. H. Süssmann.—p. 1085.
Epidemic of Mixed Infection with Scarlet Fever and Diphtheria. F. von Bormann.—p. 1085.
Dangers in Infusion of Solution of Sodium Chloride. W. Böhme.—p. 1087.
Oral Sepsis from Standpoint of Conservative Dentistry. Adloff.—p. 1088.
Question of Danger in Massage of Prostate. Orlowski.—p. 1089.
Two Cases of Agranulocytosis. W. Blumenthal.—p. 1089.
Examination of Urine for Tubercle Bacilli. H. Citron.—p. 1089.
Experience with Boas' Injection Treatment of Hemorrhoids. W. Pincus.—p. 1091.

Therapeutic Uses of Hunger and Undernutrition.—The organism's reaction to undernutrition is to slow metabolism. There is remarkably little cell destruction, rather do the cells

give up useless material. This explains the otherwise surprising favorable effects of fasting on muscular capacity and on the nervous and mental functions. At the beginning of a hunger period the blood pressure (systolic and diastolic) sinks. Meat diet results in dilatation and increased fulness of the peripheral vessels, with kinking of the capillaries, which hinders the blood flow. With a vegetable diet the peripheral circulation is relieved and the capillaries straighten out. Diseases on a basis of vascular spasticity (glomerulonephritis, eclampsia and, with certain limitations, migraine) may be expected to benefit from fasting. He is skeptical as to its permanent effects in epilepsy. Its good influence on allergic diseases is due first to the removal of spastic angioneurotic conditions. A shifting in the acid-base equilibrium toward the acid side and alteration in the intestinal flora are possible additional factors. Finally, Richter points out the similarities between the effects of fasting and of activation therapy.

Primary Lymphangitis of the Appendix.—Borchard reports a case in which inflammation of the lymph vessels of the appendix stood in the foreground from the beginning. The onset was acute with chill, fever, moderately severe abdominal pains, particularly on the right side, headache and constipation. When first seen, three days later, the abdomen was soft, not distended, there was tenderness in the ilecocecal region, slight tension of the abdominal wall on the right, low down, and moderate deep resistance. The axillary temperature was 38.8 C., pulse 120, leukocyte count 17,000 with marked shifting to the left. A diagnosis of primary lymphangitis of the appendix was made and the appendix with the adjacent mesenteriolum and neighboring glands were removed. Pathologic examination of the appendix confirmed the diagnosis.

Infrequency of Carcinoma of the Stomach After Gastro-Enterostomy for Ulcer.—Wolfsohn's own material, the literature and replies to inquiries of heads of clinics indicate that carcinoma of the stomach occurs extremely rarely in patients who have had a gastro-enterostomy. He believes that the small intestine possesses substances that tend to inhibit the growth of carcinoma and that when the mucous membrane of the small intestine is in continuous contact with the mucous membrane of the stomach, this inhibiting action is extended to the latter.

54: 1111-1150 (July 6) 1928. Partial Index

Pathology and Art of Medicine. G. B. Gruber.—p. 1111.
Dangers of Irradiated Ergosterol for Tuberculous Children. Bamberger and Spranger.—p. 1116.
*Massive Hemorrhage into Renal Bed. H. G. Zwerg.—p. 1119.
Practical Metal Finger Splint. E. Glass.—p. 1121.
Treatment of Gynecologic Infections with Autovaccines. G. J. Pfalz.—p. 1121.

Massive Hemorrhage into Renal Bed.—A man, aged 46, with high grade arteriosclerosis, suddenly and without external cause developed symptoms of ileus. There was considerable tenderness in the left renal region, but the abdominal symptoms predominated so far that immediate laparotomy was done. The bed of the left kidney was found to be the seat of a large collection of blood, forming a retroperitoneal tumor that projected into the abdominal cavity. The patient's condition became suddenly worse and the abdomen was closed without exposure of the source of the bleeding. The patient recovered. He recalled later that a few weeks before his illness he had received a blow in the abdomen. The immediate consequences, however, had not been serious.

Deutsche Zeitschrift für Nervenheilkunde, Leipzig

104: 113-192 (June) 1928

Neurotic Muscular Atrophy and Friedreich's Tabes in Same Family. A. Biemond.—p. 113.
Alopecia Universalis and Nervous System. J. Ratner.—p. 146.
*Epilepsy as Consequence of Hyperventilation on Basis of Respiratory Disturbance. H. Wolter.—p. 164.
Sense of Smell. W. Börnstein.—p. 173.

Epilepsy as Consequence of Hyperventilation on Basis of Respiratory Disturbance.—In the case reported by Wolter, the patient, a man, aged 33, had no epilepsy in his personal or family history, but his father was a heavy drinker. In 1915 he was severely wounded in the left lung. There was a resultant shrinkage of the left half of the thorax. In 1922 attacks of vertigo set in, at first without disturbances of consciousness. In 1923 he had his first epileptic attack with loss of consciousness. The seizure followed an attack of dyspnea which had led to deep respiration. The attacks continued to occur, and were usually preceded by difficulty in breathing which forced him to hyperventilation.

Jahrbuch für Kinderheilkunde, Berlin

120: 127-252 (June) 1928

*Nutrition and Scarlet Fever. W. Schlieps.—p. 127.
Amines in Dyspepsia and Intoxication. H. Röthler.—p. 162.
Formation of Amines by Bacterium Coli. G. Roske.—p. 186.
Changes in Neutrophil Granules in Infectious Diseases. A. Sandels.—p. 196.
*Influence of Serum Treatment in Scarlet Fever on Regular Change in Neutrophil Granules. H. Mommsen.—p. 219.
Four Roentgen-Ray Pictures of Recurrent Epituberculous Infiltration. W. Koelzer.—p. 228.
*Stenosis of Splenic Vein in Childhood. G. Westkott.—p. 232.
Goat's Milk Anemia. H. Baar.—p. 242.

Nutrition and Scarlet Fever.—From a study of more than 2,000 cases Schlieps has reached the conclusion that faulty nutrition plays a large part in the incidence of scarlet fever. He condemns overfeeding with foods deficient in purines—especially milk and eggs. Children with exudative diathesis, who are improperly nourished, as a rule contract the more severe forms of scarlet fever and develop complications. Children with exudative diathesis who have been rationally fed either do not contract the disease or have it in a light form, generally without complications. Children without exudative diathesis, when improperly nourished, contract scarlet fever in a light or moderately severe form, generally without complications. Properly nourished children without exudative diathesis never contract scarlet fever.

Influence of Serum Treatment in Scarlet Fever on Regular Change in Neutrophil Granules.—Mommsen, using his own method of differentiating granules, found that the regular change took place under serum treatment. The formation of cells with pathologic granulation is delayed only at the beginning; a few days later it reaches the height to be expected without serum treatement. This would indicate that the reaction between the scarlet fever virus and the organism, when once begun, is not cut short by the serum treatment, but that the disease continues its course. This is in agreement with the clinical experience that the prevention of complications by serum injection is very uncertain.

Stenosis of Splenic Vein in Childhood.—In the case described by Westkott, that of a 10 year old girl, who had previously been healthy, severe gastric hemorrhage suddenly appeared with hematemesis and melena. The spleen was hard and enlarged. Blood examination showed grave anemia of secondary type with greatly lowered color index. The leukocyte count, which was normal at first, gave place to a decided leukopenia. The erythrocyte resistance was markedly lowered. Eggs of *Trichocephalus dispar* were found in the stool, but it appeared doubtful that there was any etiologic connection between these parasites and the disease. After careful consideration of all possibilities, a diagnosis of stenosis of the splenic vein was reached. Four days after an attack of hematemesis, a transfusion of 110 cc. of blood was made. Severe gastric hemorrhage followed, but was checked, and no further attacks occurred. There was a gradual rise in hemoglobin content. Weekly injections of 20 cc. of blood were continued for ten weeks. The anemia cleared up entirely, but there was practically no change in the size of the spleen.

Klinische Wochenschrift, Berlin

7: 1209-1256 (June 24) 1928. Partial Index

Medical Treatment of Diabetes. F. Bertram.—p. 1209.
Value of Grain Germs in Dietotherapy. A. Schittenhelm.—p. 1214.
*Pharmacology and Physiology of Iron. E. Starkenstein and H. Weden.—p. 1220.
Activity Substances in Muscles. E. Lehnartz.—p. 1225.
*Connections Between Parotid, Pancreas, Blood Sugar and Diabetes Mellitus. S. Seelig.—p. 1228.
*Characteristics of Rare Blood Diseases. R. Stern and E. Hartmann.—p. 1230.
Serodiagnosis of Syphilis by Flocculation of Extracts Containing Cholesterol. H. Sachs and E. Witebsky.—p. 1233.
Adsorption of Pigments in Serum of Patients with Lead Poisoning. A. Seitz.—p. 1234.

*Action of Liver Diet on Red Blood Picture and on Blood Cholesterol. W. Beck.—p. 1235.
Differences in Pathologic Changes Caused by Leptospira Icteroides and Spirochaeta Icterohaemorrhagiae. R. Kaneko.—p. 1236.

Pharmacology and Physiology of Iron.—Simple ferric compounds, introduced into the organism from outside, are always inactive. They are taken up, in part, by the spleen in unchanged form, stored and gradually excreted. Another part is taken up by the liver and reduced to inactive "ferrous iron," which is probably used in the formation of hemoglobin, but is not serviceable for the catalytic processes. Active "ferrous iron" is represented chiefly by ferrous chloride, which is formed only in the organism; it is also dissociated in the organism and oxidized to a ferric compound, which differs from directly introduced simple ferric compounds in that it remains longer unchanged in the circulation and in that it passes over into the filtrate of the deproteinized blood plasma. The spleen does not take up any active "ferrous iron" nor, apparently, any of the "ferric iron" that is formed from the ferrous. It is deposited in the liver only after it has been reduced to inactive "ferric iron." Hence it appears that the more rapidly and extensively administered iron becomes stored in the spleen and liver, the more useless is it for pharmacologic and apparently also for therapeutic and biologic iron functions in the organism.

Connections Between Parotid, Pancreas, Blood Sugar and Diabetes Mellitus.—Experimenting on dogs, Seelig studied the question of the endocrine function of the parotid, as suggested by Hansemann. Ligation of Stenson's duct reduced the blood sugar permanently. The hyperglycemia of pancreatectomized dogs could not be reduced by this means. If, however, ligation of Stenson's duct preceded the removal of the pancreas, the hyperglycemia resulting from the latter procedure was not so extreme. Of ten patients with diabetes of moderately severe and severe grades, seven seemed to be favorably influenced by ligation of Stenson's duct, three were not influenced.

Characteristics of Rare Blood Diseases.—In agranulocytosis the granulocytic apparatus only is insufficient, in essential thrombopenia the megakaryocytes only are injured, in panmyelophthisis there is destruction of the entire blood-forming apparatus.

Action of Liver Diet on Erythrocyte Picture and on Blood Cholesterol.—In Beck's experience liver diet succeeded in anemias caused by abnormality of the erythrocytes or by increased hemolysis, but not in anemias caused by defective functioning of the bone marrow. He observed, further, that the cholesterol content of the blood increased in a certain parallelism with the increase in erythrocytes. This was true of healthy persons as well as of patients with anemia. In patients whose erythrocyte count was uninfluenced, the cholesterol content of the blood did not change.

Medizinische Klinik, Berlin

24: 1033-1072 (July 6) 1928. Partial Index

Nitrous Oxide Anesthesia as Adjuvant of Local Anesthesia. H. Finsterer.—p. 1033.
*Treatment of Endocarditis Lenta, Infectious Arthritis and Their Sequelae. W. Alwens.—p. 1035. C'cn.
Effects of Aviation on Organism. W. Schnell.—p. 1038. C'td.
*Industrial Poisoning with Thallium. A. Buschke.—p. 1042.
Blood Cysts. H. Biesenberger.—p. 1044.
Treatment of Vulvovaginitis in Children. A. Fessler.—p. 1045.
Synthalin: Reply to Frank. H. Staub.—p. 1047.
Reply. E. Frank.—p. 1049.
Tuberculous Contact Infection. H. Koopmann.—p. 1050.
Blood Formation and Mesenchymal Germinal Layer. M. Silberberg and G. Orzechowski.—p. 1051.

Activation Therapy of Chronic Infectious Arthritis.—In the forefront of nonspecific treatment of chronic infectious arthritis stands parenteral activation therapy by proteins, sulphur, iodine, etc. The aim of the treatment is to convert the chronic process into an acute process. From his experience with 350 cases, Alwens advises very small doses, since chronically inflamed tissue reacts to slight irritation. (An exception is made when the lesions are in the spine; in these cases large doses may be given.) The general reaction should not be marked. The focal reaction should be just recognizable. As sensitization takes place and the cells' capacity to react alters, the dose must be changed. Each reaction must disappear completely before treatment is continued. After a few weeks' treatment, there must be an interval of rest, and after a certain time it is wise to change to a new remedy. Oral activation therapy is less effective, in his experience, than parenteral. It may be used for patients who show particular sensitiveness. The reactions in balneotherapy show a parallelism to those in protein therapy and suggest a similar explanation.

Industrial Poisoning with Thallium.—Buschke cites official reports from various places in Prussia in which thallium is used in industrial processes. Optic nerve atrophy, chronic nephritis, pains in the extremities, loss of patellar and Achilles tendon reflexes, eosinophilia and lymphocytosis were reported as having occurred in men who had worked from a few days to a few months with thallium. Animal experiments support the supposition that these changes were the result of chronic thallium poisoning.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

79: 175-252 (June) 1928

Varieties of Pregnancy Toxicosis. L. Seitz and H. Eufinger.—p. 175.
*Bronchial Asthma and Pregnancy. R. Spiegler.—p. 193.
Edema of Uvula Immediately After Delivery. K. Rosenloecher.—p. 197.
Squatting Position in Third Stage of Labor. S. Hammerschlag.—p. 200.
Importance of Sacro-Uterine Ligaments in Gynecology. H. Wiesbader. —p. 208.
Phenomenon of "White Fields" in Portio. H. Hinselmann.—p. 214.
Influence of Ovarian Hormone on Genital Apparatus and Mammary Gland. K. Ebhardt.—p. 223.

Bronchial Asthma and Pregnancy.—Spiegler cites a case in which attacks of asthma, which had recurred regularly every spring and fall since the patient was 4 years old, were absent during a first pregnancy, although the premonitory symptoms appeared. The patient's mother had had the same experience. In another patient, also a young primigravida who had suffered from asthma since her fourth year, the attacks reappeared at the onset of pregnancy, after having been absent for one year, following ultraviolet-ray treatment. In the sixth month of pregnancy they ceased.

Münchener medizinische Wochenschrift, Munich

75: 1111-1150 (June 29) 1928. Partial Index

Changes in Diagnosis of Gastric Diseases in Two Decades. M. Haudek. —p. 1111.
Rickets Prophylaxis by Irradiated Ergosterol. J. Aengenendt.—p. 1112.
"Hypervitaminosis Following Large Doses of Vitamin D." H. Kreitmair and T. Moll.—p. 1113.
Action of Irradiated Ergosterol. W. Pfannenstiel.—p. 1113.
*Physiology of Fat Soluble Vitamin A. T. Birnbacher.—p. 1114.
*Amino-Acid Content of Blood in Leukemia. E. Wiechmann.—p. 1115.
*Value of Blood Examination for Differential Diagnosis, Diagnosis and Prognosis of Pulmonary Tuberculosis. H. Hennes.—p. 1116.
Paroxysmal Tonic Eye Spasms in Chronic Myastatic Encephalitis. A. Holterdorf.—p. 1118.
Action of Iron and Albuminum Hydrate on Arsenious and Arsenic Acids. M. A. Rakusin.—p. 1121.
*Fever and Carcinoma of Colon. R. Tscherning.—p. 1121.
Rheumatism and Oral Sepsis. L. Schmidt.—p. 1122.
Hay-Fever from Mattress-Filling, Pigeon-Feather and Bee-Sting Asthma. H. Dekker.—p. 1123.
Thallium Poisoning in a Child. J. Fuld.—p. 1124.
Finger Tip Pulse. F. W. A. Weber.—p. 1127.
Injection Treatment of Varicose Veins. L. Isaak.—p. 1128.
*Increase in Pulmonary Embolism. O. Burwinkel.—p. 1129.
Dysesthesias and Angina Pectoris. F. Oster.—p. 1129.
New Clear Protective Glass for Ultraviolet Irradiation. Grober.—p. 1129.
"Cerebral Air Embolism After Attempts at Abortion." G. Haselhorst. —p. 1130.

Physiology of Fat Soluble Vitamin A.—In the statistics of acute essential hemeralopia there is a remarkable preponderance of men as against women. A relatively large number of cases occurred in pregnant women during the spring epidemics of the disease in Vienna in 1919-1924. The increase in the number of cases in both sexes was no doubt due to the lack of vitamin A in the diet. It appears that women in the menarche possess a greater resistance against deficiency of vitamin A than do men and that a certain amount of this resistance is lost during pregnancy. A similar difference between the sexes seems to exist as regards vitamin D, as evidenced by the greater frequency in which the male sex is attacked by late rickets and by osteopathy of adolescence on diets deficient in vitamin D. The greater reserves of fat in the woman has been advanced in explanation.

Amino-Acid Content of Blood in Leukemia.—In leukemias with high leukocyte count Wiechmann found normal

amino-acid values in the plasma and in the erythrocytes and high values in the leukocytes. The high amino-acid values in the leukocytes cause the rise of amino nitrogen in the total blood in leukemias with high leukocyte counts. In leukemias with low leukocyte counts the amino-acid content of the total blood does not differ from that in normal persons.

Value of Blood Examination for Differential Diagnosis, Diagnosis and Prognosis of Pulmonary Tuberculosis.—Changes in the blood are of little significance in the differential diagnosis of pulmonary tuberculosis. In diagnosis they are useful when taken in conjunction with other diagnostic measures but not alone. In judging the difference and severity of the tuberculous process, serial hemograms are of value. The changes show a certain parallelism with the pulmonary process. They are a delicate indicator of the action of the tuberculous process on the general organism.

Fever and Carcinoma of the Colon.—Tscherning recounts four cases in which there had been occasional rises in temperature to 39 C. or higher for several months. There was loss of weight but no other symptom of carcinoma. In two of the cases the other symptoms suggested infection (enteritis, cholecystitis). The roentgen-ray examination did not show obstruction of the intestine. Carcinoma of the colon was found in each case.

Increase in Pulmonary Embolism.—Burwinkel suggests the following explanation for the recent increase in pulmonary embolism: the source of the emboli is in the network of the trabeculae carneae and of the musculi pectinati of the right heart. Here coagula form when the blood stream in the pulmonary circulation is checked as in heart defects with stasis, pleural effusions and adhesions, pneumothorax, tumors in the thoracic cavity and in the absence of the stimulative influence of the respiratory and body musculature on the circulation in patients who have been long confined to bed. Thrombi are easily broken off if sudden demands are now made on the heart either by intravenous injection of cardiotonic medicines or by sudden rising up in bed or too early getting up. When heart stimulants are given orally or rectally, their action is gradual and the danger of pulmonary embolism is naturally less. The old rule was well founded, Burwinkel states, that digitalis should not be given in hemorrhagic infarction. Breathing exercises should be taken by persons who have to remain long in bed. Of late years Burwinkel has had fewer cases of pulmonary infarction than before, although he makes frequent use of the intravenous route in treating grave conditions. He ascribes his good results to the fact that he removes large amounts of blood from all patients with stasis in the portal or pulmonary circulation.

Wiener klinische Wochenschrift, Vienna

41: 905-940 (June 28) 1928. Partial Index

Adiposity and Islands of Langerhans. W. Falta.—p. 905.
Healing of Posttraumatic Cerebral Meningitis. R. Demel.—p. 910.
Changes in Agglutinability of Erythrocytes Caused by Thomsen's Agent. M. Eisler and N. Fujioka.—p. 912.
Present Day Treatment of Glanders, Anthrax, Diphtheria of Skin and Erysipelas. R. Geiger.—p. 915.
*Surgery of Gallbladder. A. Mülleder.—p. 919.
*Initial Exanthem in Tuberculous Infection in Childhood. K. Kundratitz.—p. 921.
*Death Following Blood Transfusion. H. Biesenberger.—p. 923.

Surgery of the Gallbladder.—Mülleder lays great weight on keeping cholecystectomy as simple as possible. He prefers subserous extirpation with isolated ligation of the cystic duct and cystic artery. Operations on the gallbladder should be performed early before complications have set in.

Initial Exanthem in Tuberculous Infection in Childhood.—A child, aged 2, who a few weeks previously had had a negative tuberculin reaction, became ill with measles. During this illness he was exposed to tuberculosis. Four weeks later the tuberculin reaction was again negative. About five days after this time the child developed fever (39 C.) and numerous slightly elevated light red efflorescences, varying in size from a pin head to a lentil, appeared on the shoulders and upper extremities. There was no enanthem or other pathologic change. The next day the exanthem extended to the trunk and lower extremities. The individual efflorescence was somewhat larger and the exanthem resembled that of measles. On the following day two efflorescences resembling erythema nodosum were observed on the leg. The Pirquet test was again applied and a strong reaction with exudation was obtained. During the next few days the exanthem disappeared but several erythema nodosum efflorescences appeared on the legs. The temperature elevation lasted two weeks. Kundratitz believes that this was a case of initial exanthem of tuberculosis in the sense of Uffenheimer.

Death Following Blood Transfusion.—Biesenberger cites a case illustrating the fact that the strain put on the heart by blood transfusion may bring about a sudden paralysis of the heart muscle. After 150 cc. of blood had been transfused, the patient, who had pernicious anemia and paralysis of both lower extremities from myelitis, felt stabbing pains in the heart region. Cyanosis of the face with rapid extension over the entire body set in with rapid deterioration of the pulse. The transfusion was broken off and oxygen and heart stimulants were given. There was temporary improvement, followed shortly by death with symptoms of cardiac insufficiency. The necropsy indicated that death was due to cardiac paralysis. There were fragility of the myocardium and insufficiency and stenosis of the mitral valve, sequelae of an old endocarditis.

Zeitschrift für klinische Medizin, Berlin

108: 1-422 (May 21) 1928

Protective Inoculation Against Diphtheria. A. Czerny.—p. 1.
*Chronic Infectious Arthritis and Its Surgical Treatment. E. Payr.—p. 4.
Diabetes and Pregnancy. F. Umber and M. Rosenberg.—p. 33.
*Angina Agranulocytotica. U. Friedemann.—p. 54.
*Hanover Disease. Jürgens.—p. 67.
Patients with Vegetative Stigmata. G. von Bergmann.—p. 90.
Patients with Vegetative Stigmata and Reid-Hunt Reaction. G. von Bergmann and M. Goldner.—p. 100.
Nature of Reid-Hunt Reaction. M. Goldner.—p. 110.
Myasthenia and Muscle Chemism. G. von Bergmann and K. Dresel.—p. 120.
Rôle of Lipoids in Vegetative System. K. Dresel and R. Sternheimer.—p. 130.
Biologic Limitation of Vegetative System. S. G. Zondek and F. Matakas.—p. 153.
Distemper as Model Experiment for Poliomyelitis. F. H. Lewy.—p. 169.
Gastrocardiac Symptoms. H. H. Berg.—p. 186.
Mucous Membrane of Normal and Diseased Large Intestine. W. Knothe.—p. 199.
Inflammation in Lymphatic and Myeloid Leukemia. F. Kauffmann.—p. 215.
Ulcer in Young Persons. H. Kalk.—p. 225.
Chronaxia in Tabes. E. Blumenfeldt and H. Köhler.—p. 231.
Relation of Oxygen Inspiration and Carbon Dioxide Expiration to Ventilation in Hard Muscular Work. H. Herxheimer and R. Kost.—p. 240.
Functional Significance of Cyanosis. E. Wollheim.—p. 248.
Relations Between Arterial Hypertension and Rigid Pulse. S. Seelig.—p. 279.
Fluctuating Streptococcus Infection. R. Freund.—p. 289.
Sclerosis of Pulmonary Artery. J. Ducach.—p. 313.
Persistence of Fetal Conditions in Cardiovascular System. L. Doxiades.—p. 321.
"Paradentosis" (Alveolar Pyorrhea) as Symptom of Endocrine and Metabolic Disturbances. J. Citron.—p. 331.
Regurgitatio Coloiliaca. J. Plesch.—p. 340.
*Action of Electrolytes on Speed of Psychic Reactions. G. Peritz.—p. 360.
Action of Sulphur. L. Pincussen and E. Gornitzkaja.—p. 369.
Height and Breadth. M. Berliner.—p. 378.
Studies in Immunity. E. Fränkel.—p. 386.
Intestinal Movements. F. Fleischer.—p. 398.
*Do Results of Liver Diet Explain Pathogenesis of Pernicious Anemia? Reckzeh.—p. 401.
Pain and Its Treatment with High Frequency Currents. R. Hirsch.—p. 408.
Nervous Regulation of Carbohydrate Metabolism in Origin of Diabetes. E. Leschke.—p. 410.
Rôle of the Liver in Fat Metabolism. K. Retzlaff.—p. 417.
Experiments in Uricolysis. J. Rother.—p. 420.

Chronic Infectious Arthritis and Its Surgical Treatment.—Payr regards the treatment of chronic infectious arthritis as a highly promising field for the surgeon and regrets that cases do not get to him more often and at an earlier stage. An important preliminary part of the surgical plan is the stopping of pain in the joint. In the knee synovectomy holds great promise for the moist form, also for the joint with enlarged synovial villi. The fear that the large wound area would become infected has not proved well grounded. In the hip, treatment is determined by the bony changes. If these are slight, it may be sufficient to anesthetize the capsule and articular cavity, fill the capsule with phenol camphor and apply an apparatus to relieve the extremity of weight. It will now be possible to carry out systematic movements and this will increase mobility. Tenotomy of the adductors can be used in more

advanced cases to improve posture by diminishing the obliquity of the pelvis in relation to the spine. For cases with marked alteration in the shape of the head and large osteophytes, bloodless procedures are a waste of time. The misshaped head must be resected, the remaining portion rounded off and inserted into the acetabulum in exaggerated abduction and inward rotation. In the treatment of an arthritic joint, nerves and muscles must be included. Relief of muscular hypertonus is a condition of success.

Angina Agranulocytotica.—Of Friedemann's twenty-nine patients with agranulocytic angina, five were men, twenty-four women. Only one patient was under 20 years of age. In sixteen the onset was acute, in nine the patients felt unwell for a week before the actual onset; the prodromal symptoms were not in the throat. In about half the patients the disease ran a rapid course, death occurring within eight days. There were three cases of recurrence. In one the recurrence, occurring six months after the first attack, proved fatal. There were definite changes in the tonsils in twenty-six of the cases, but the changes were not always of necrotic nature. Necrosis was present in the laryngeal mucosa in two cases, in the vagina and vulva in two; there were ulcers in the pharyngeal mucosa in three; in two severe ulcerous dermatitis, in one necrosis of the upper jaw, in one necrosing panaritium. There was pronounced leukopenia in all the cases. Granulocytes were not always entirely absent, but they appeared in very small numbers. The absolute number of erythrocytes was greatly diminished in the majority of cases. In a few, however, their numbers were normal or slightly increased. The number of blood platelets was normal or increased in all cases. Subicteric skin discoloration was observed in only seven cases. There were fourteen necropsies. The spleen, lymph glands and liver were normal macroscopically and microscopically in all these cases. In three cases there was fatty marrow in the long bones; in seven cases, red marrow; in four cases information on this point was lacking. The erythroblasts and megakaryocytes were present in normal numbers. Myeloid cells were not entirely lacking. In one case granulocytes were demonstrable in the bone marrow obtained by sternal puncture immediately after death. In twenty-six cases the blood was examined bacteriologically during life, in most cases by anaerobic as well as by aerobic culture. In twenty cases the result was negative; the streptococcus was found twice, the pneumococcus, staphylococcus, pyocyaneus and colon bacillus once each. In all these cases the bacteria were demonstrable in the organs after death. In one case *Bacillus coli* was cultured from the heart blood and organs after death, although cultures during life were sterile. Sepsis was present in three of the five male patients. Friedemann suggests that the pathogenesis may be different for the two sexes. The mortality was 21.06 per cent. Five of the patients were treated with roentgen rays and of these all recovered. Only two of the remaining patients recovered. He believes that extensive necrosis of mucous membranes makes the prognosis worse.

Hanover Disease.—Jürgens discusses the epidemic of gastro-intestinal disease that occurred in Hanover in the summer of 1926. A connection with a breakdown in the chlorinization of the water supply was assumed, but Jürgens points out that cases occurred before this breakdown and that the epidemic continued after the purification of the water supply was again effective. He suggests a connection with the epidemics that occurred in flooded districts in various parts of Germany in that year. Parts of Hanover are so situated that cellars are liable to be flooded after heavy rains and they were so flooded after the extraordinarily heavy rainfall of June of that year. It was in these parts of the city that the epidemic occurred. The disease attracted attention and was described as "new" not because of any peculiarity in its symptoms, which were the usual ones of acute gastro-intestinal disturbance, but because of the large number of persons affected.

Action of Electrolytes on Speed of Psychic Reactions.—Peritz found that calcium shortens and sodium lengthens the reaction time in psychic reactions. It appeared that the action of the electrolytes was on the muscles called into play in the reactions.

Do Results of Liver Diet Explain Pathogenesis of Pernicious Anemia?—Reckzeh believes that ingested liver brings to the erythrocytes material to strengthen their lipoid coverings and to increase the amount of their stroma. The erythrocytes are thus provided with the power of resisting the action of toxins.

Zeitschrift für Tuberkulose, Leipzig

50: 449-512 (May) 1928

Pneumothorax Pleuritis. O. Steinmeyer.—p. 449.
*Treatment of Empyema in Childhood. H. Pogorschelsky.—p. 460.
Stereoscopic Roentgen-Ray Pictures of the Lungs. R. Hollmann.—p. 463.
*Value of Various Methods of Examination in Tuberculosis of the Larynx. L. Rickmann and F. Ernst.—p. 465.
Blood Uric Acid in Healthy and Tuberculous Persons at High Altitudes. P. Borchardt.—p. 473.
*Potential Blood Alkalinity in Pulmonary Tuberculosis. T. D. Kahn. —p. 480.
Experiences with Sedimentation of Erythrocytes with Particular Regard to Diagnosis and Treatment of Tuberculosis. H. Starcke.—p. 486.

Treatment of Empyema in Childhood.—Puncture followed by repeated irrigations with ethylhydrocupreine hydrochloride or by drainage, according to existing conditions, is the method of choice, in Pogorschelsky's opinion.

Value of Various Methods of Examination in Tuberculosis of the Larynx.—In tests in 100 cases, Rickmann and Ernst found that the urochromogen and diazo reactions were valueless for diagnosis in laryngeal tuberculosis. A positive reaction is a bad prognostic sign. A positive reaction contraindicates local treatment (by surgery or the galvanocautery) and activation therapy (deep roentgenotherapy). If the reaction to the allergic test, the sedimentation speed and the differential blood picture are all favorable, the prospects from operation or from activation therapy are excellent.

Potential Blood Alkalinity in Pulmonary Tuberculosis.—In examinations on 132 patients with pulmonary tuberculosis, Kahn found that the potential alkalinity of the blood was lowered in the majority of cases. It was lower in open forms than in occult. When the clinical condition of the patient improved, the alkalinity of the blood rose; when the clinical condition became worse, it fell. A considerable rise was sometimes seen when the tuberculous process took a turn for the worse. This rise was temporary and was probably the result of demineralization of the organism through the blood. Sudden rises and sudden falls in the alkaline reserve are of unfavorable prognostic significance. These observations suggest treatment with alkaline mineral water and a diet rich in alkali and in minerals.

Zentralblatt für Gynäkologie, Leipzig

52: 1433-1496 (June 9) 1928

Obstetrics in Home and Clinic. M. Hirsch.—p. 1434.
Local Anesthesia in Second Stage of Labor for Protection of Muscles of Perineum. E. Pribram.—p. 1447.
Excess of Lactic Acid in Maternal Organism in Normal and Pathologic Pregnancy. A. Loeser.—p. 1450.
Torsion of Pedicle in Normal Adnexa. M. Wachtel.—p. 1453.
*Tubal Pregnancy with Transmigration of Ovum Six Years After Bilateral Ligation of Tubes. G. Schwarzwäller.—p. 1459.
*Bilirubinemia in Pregnancy and Labor. S. Mikeladse.—p. 1461.
Severe Colpitis from Coitus with Condom. W. Rother.—p. 1470.

Tubal Pregnancy with Transmigration of Ovum Six Years After Bilateral Tubal Ligation.—Schwarzwäller's patient, who had undergone vaginal fixation and colporrhaphy because of prolapse of the vagina and displacement of the uterus, suffered a partial recurrence of the condition after two pregnancies. Ligation of both tubes was therefore carried out. About a year and eight months later it was necessary to operate again because of femoral hernia on the left side. Apart from this the patient experienced no disturbance until six years after the tubal ligation. Examination disclosed that there was a tumor about the size of a peach to the left of the uterus. When the abdomen was opened, the remaining portion of the left tube was found to be transformed into a tumor, which microscopic examination showed contained chorionic villi. A corpus luteum was found in the part of the right ovary that remained after the previous resection.

Bilirubinemia in Pregnancy and Labor.—Using the method of Vogl-Zins-Bakscht for quantitative and that of van den Bergh for qualitative determination of bilirubin in the blood, Mikeladse examined 277 women, including thirty-three healthy

nonpregnant women. The author distinguishes between two kinds of bilirubin, "obstructive" bilirubin ascertained by direct examination, and "functional bilirubin," ascertained by indirect examination. ("Direct" and "indirect" refer to H. van den Bergh's method.) Both kinds were found in healthy nonpregnant women as well as in pregnant women. In nonpregnant women the direct test was positive in 6 per cent of the cases, the indirect in 76 per cent. The bilirubin test would thus be of no value in the diagnosis of early normal pregnancy. The frequency of functional bilirubin in women in the first and second periods of pregnancy exceeded that in nonpregnant women by 7.5 and 3 per cent, respectively. There was no increase in bilirubin during labor. The rise in bilirubin observed during pregnancy disappeared on the seventh or the eighth day after pregnancy, except in cases of toxicosis or infection, when it lasted somewhat longer. In normal pregnancy as well as in healthy nonpregnant women the amount of functional bilirubin varied between 1.6 and 6.25 mg. per hundred cubic centimeters of blood. Greater amounts were, with few exceptions, pathologic. In toxicosis, especially hyperemesis of pregnancy, the rise in bilirubin corresponded to the severity of the toxicosis.

52: 1561-1624 (June 23) 1928

Early Diagnosis of Carcinoma of Portio by Histologic Examination. W. Schiller.—p. 1562.
Intravenous Injection of Ergotamine Tartrate in Treatment of Postpartum Hemorrhage. F. von Mikulicz-Radecki.—p. 1567.
*Symmetric Gangrene of Lower Extremities Following Use of Ergot Preparations. E. Goldberger.—p. 1573.
*Floating Test for Intactness of Placenta. H. Kurtz.—p. 1578.
Apparent Defect in Intact Placenta. H. Sachs.—p. 1583.
Question of Professional Secrecy in Reporting Death from Criminal Abortion. G. Strassmann.—p. 1585.
*Combined Extra-Uterine and Intra-Uterine Pregnancy. P. H. Rulle.—p. 1590.
*Connection Between Eczema and Disturbance of Ovarian Function. P. Szegö.—p. 1593.
Intra-Abdominal Menstrual Hemorrhage. G. K. Ziwatoff.—p. 1597.

Symmetric Gangrene of Lower Extremities Following Use of Ergot Preparations.—Goldberger's patient, who had had one normal delivery and two miscarriages, was admitted with a condition diagnosed as threatened febrile abortion. The size of the uterus was that of a two months' pregnancy. An intraperitoneal abscess was opened from the posterior vaginal vault and found to contain streptococci. Two weeks after admittance, as placental tissue was palpable in the widened external os uteri and the ovum was apparently loosened, intramuscular injection of 1 cc. of ergotamine tartrate was made in order to hasten expulsion. Since this was without effect, on the next four days twelve drops of ergotamine tartrate were given three times a day by mouth. On the fourth day paresthesia appeared in both lower legs. In the two days following no ergotamine was given. The next day the ovum was spontaneously expelled. Because of severe bleeding, twelve drops of ergotamine tartrate was given. On the same day livid spots the width of a hand appeared over the malleolus on both lower extremities. On the theory that this was a case of trophic disturbance, periarterial sympathectomy was performed on the left leg but did not bring about any improvement. On the contrary, the condition grew worse, becoming evident as an ischemic necrobiosis of the skin. Theophylline and sodium nitrite were given in maximal doses and improvement began at once. When the patient was dismissed the right foot was entirely normal. On the left the skin of the dorsum was discolored, glossy and atrophic; and this whole region was anesthetic, although function was undisturbed except in the first three toes. A year later the left leg was almost normal in appearance and function.

Floating Test for Intactness of Placenta.—Kurtz applied Sachs' floating test to 200 cases. In the great majority the result of the test was positive (that is, the placenta floated in a horizontal position) and was in agreement with the result of inspection. In these cases there was no question as to the intactness of the placenta. In ten cases the result of the test was negative, although the placenta was found to be intact. In all these cases the placenta assumed an oblique position. The author, therefore, concludes that in general the oblique position should be regarded as positive. In four cases the placenta either assumed a vertical position or lay at the bottom of the vessel. In all of these cases the placenta was found to be incomplete. In seven doubtful cases, in which the placenta appeared to be incomplete, the result of the test was positive (placenta floated in horizontal position); no further examination was made and the puerperium was uneventful.

Simultaneous Extra-Uterine and Intra-Uterine Pregnancy.—The occurrence of extra-uterine and intra-uterine pregnancy at the same time is rare, although not so rare as is usually assumed; some cases are not diagnosed. In the case reported by Rulle, that of a nonipara, aged 38, the condition had first been diagnosed as appendicitis. Gynecologic examination revealed an intra-uterine pregnancy (incomplete abortion) and a hematocele in the right tube (extra-uterine pregnancy). The incomplete abortion was ended by means of curettage and three days later laparotomy was performed. About two tablespoons of blood was found free in the abdominal cavity. There was a corpus luteum in each ovary. In the posterior part of Douglas' pouch were old coagula. The size of the uterus was that of a six to eight weeks' pregnancy. The abdominal end of the right tube had been transformed into an adherent, dull red tumor the size of an orange. The adhesions were removed, and the abdominal end of the right tube extirpated. Microscopic evidence of pregnancy was found in the uterus, but not in the hematocele.

Eczema and Disturbance of Ovarian Function.—Szegö reports sixteen cases in which skin disease was associated with ovarian disturbance. Six cases occurred in the menopause, three in pregnancy, one after roentgen-ray castration, one after removal of the ovaries; three were associated with infantilism, and two with insufficiency of ovarian function. Among these there were twelve cases of chronic and acute eczema; two cases of eczema with furunculosis and two cases of dermatitis. Ovarian extract given by intravenous or intramuscular injection was found effective in relieving both the ovarian disorder and the skin condition. Nine patients were reported as cured, three improved; one patient showed no effect; and the other three patients did not remain under control.

Hospitalstidende, Copenhagen

71: 543-566 (May 24) 1928

"Refection": Infectious Change in Intestinal Processes Enabling Rats to Grow and Thrive Without Vitamin B in Diet. L. S. Fridericia et al.—p. 543. C'cn.
*Significance of Meckel's Diverticulum in Some Pathologic Conditions. T. Pedersen.—p. 554. C'td.

71: 567-592 (May 31) 1928

*Significance of Meckel's Diverticulum in Some Pathologic Conditions. T. Pedersen.—p. 587. C'tn.

71: 593-620 (June 7) 1928

Reactivation of Wassermann Reaction? A. Portmann and H. Boas.—p. 593.
*Significance of Meckel's Diverticulum in Some Pathologic Conditions. T. Pedersen.—p. 611. C'cn.

Significance of Meckel's Diverticulum in Some Pathologic Cases.—Pedersen discusses diseases due to Meckel's diverticulum in connection with a report on eleven cases, two of acute diverticulitis and nine of ileus (three cases of invagination, two of strangulation and incarceration, two of extensive adhesions around a Meckel diverticulum, and two of kink in the intestine due to traction by a Meckel diverticulum). Treatment must be operative. Primary resection of diverticulum and intestine, while the only intervention which avoids complications, such as stenosis and invagination, cannot be recommended as the normal method because of the time required, but should be employed with a broad-based diverticulum and in two-stage operations. Meckel's diverticulum found by chance during operation should probably be excised, if removal is easy; it must be removed if it is pathologically changed. Of his thirty-nine cases of ileus, fourteen were fatal; of the nine due to Meckel's diverticulum, five were fatal.

Upsala Läkareförenings Förhandlingar, Uppsala

34: 1-679 (June 16) 1928

*Peritoneal Pseudomyxomas Originating from Vermiform Appendix. J. Naeslund.—p. 1.
*Case of Uterine Angiomyoma. E. Ehnmark.—p. 219.
*Abdominal Symptoms in Suprarenal Hemorrhage. E. Hasselström and O. Hultén.—p. 229.
*Diffuse Xanthomatosis of Small Intestine. H. Key.—p. 247.
*Suprarenal Tumors. N. Gellerstedt and R. Hjelm.—p. 271.

Plague in Sweden in 1927. C. Naeland and R. Ströman.—p. 289. In English.
*Six-Year Radiologic Cure of Inoperable Cancer of Cervix. J. Heyman.—p. 299.
Hernia Incarcerated in Foramen of Winslow. S. Richter.—p. 303.
*Case of Multiple Myomas in Colon. K. G. Kling.—p. 307.
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*Differential Diagnosis of Glycosurias. Y. Åkerrén.—p. 341.
Earliest Grants of Doctor's Degree in Uppsala. C. T. Mörner.—p. 369.
*Properitoneal Cyst in Anterior Abdominal Wall. E. Utterström and H. Bergstrand.—p. 403.
Knowledge of Actinomycosis: Bacteriologic Diagnosis. B. Bergenhem.—p. 421.
*Tissue Reaction to Iodized Oil. C. Grill and K. G. Kling.—p. 459.
Treatment of Tuberculosis of Kidney in Advanced Pulmonary Tuberculosis. G. Söderlund.—p. 473.
Roentgenologic Studies of Heart. H. Laurell.—p. 495.
*Effect of Irradiation on Tissue Cultures. L. Santesson.—p. 591.
*Genesis of Tumors and Allied Formations. W. Bosæus.—p. 603. In English.

Peritoneal Pseudomyxomas Originating from Vermiform Appendix.—By tying off the appendix from the rest of the intestinal canal in new-born rabbits, Naeslund succeeded within an observation period of 595 days in producing well developed, large, distended formations filled with mucus (mucoceles), sometimes with diverticula. In a part of the cases the mucoceles ruptured, the mucus in some instances reappearing later in pea-sized formations with epithelial cells, partly free, partly pedunculated, localized in the omentum. Small masses containing mucus and in places covered with epithelial cells were found also on the serous membrane of the small intestine. He made pathologico-anatomic investigations in twelve cases of peritoneal pseudomyxomas originating from the appendix in man, all found by accident; nine were in men, three in women, making a total published to date of forty-eight cases in men and forty-one in women. His results agree in the main with those previously published. Comparison of the changes produced by him experimentally in rabbits with those found in peritoneal pseudomyxomas in man showed the same picture in all essentials. There are 136 illustrations and nine pages of bibliography.

Case of Uterine Angiomyoma.—Two uterine tumors were found in Ehnmark's case, the larger one a fibromyoma with red necrosis, the smaller one an angiomyoma. A full description is given.

Abdominal Symptoms in Suprarenal Hemorrhages.—Hasselström and Hultén describe a case of massive retroperitoneal bleeding presumably from the left suprarenal body. Roentgen-ray examination was valuable in diagnosis. In connection with three other personal cases and twelve from the literature, the clinical and pathologico-anatomic pictures are presented.

Diffuse Xanthomatosis of Small Intestine.—Key reports in detail a peculiar case with localization in the small intestine, discovered accidentally at necropsy in a woman, aged 67, and reviews the cases of xanthomatous changes in the stomach and intestinal canal published in the literature.

Suprarenal Tumors.—Roentgen-ray examination in Gellerstedt and Hjelm's case, in a boy, aged 6, revealed a coral-shaped area of calcification above the left kidney. At necropsy this was seen to belong to a tumor in the right suprarenal body, probably developed from the suprarenal cortex, consisting of a large number of sympathetic ganglion cells and nerve fibers, and believed to be a ganglioneuroma. Because of the presence of many young and immature cells and the structure of the nervous tissue, it was classified as a ganglioblastoma.

Six-Year Radiologic Cure of Inoperable Cancer of Cervix.—Heyman's patient with inoperable and considerably advanced squamous cell cancer, in a quintipara, aged 47, remained without symptoms for six and a half years after treatment with radium and roentgen rays. Death resulted from agranulocytic angina. At necropsy no sign of recurrence was found.

Case of Multiple Myomas in Colon.—Kling's patient, aged 67, had had colicky pain in the abdomen for a year. It became intense and localized in the sigmoid flexure, and was accompanied by diarrhea. The diagnosis was chronic colitis. At necropsy, the inside of the large intestine, from the ileocecal valve to the anus, was found covered with polypoid formations of hazelnut size, mostly broad based, partly pedunculated. Microscopic examination showed the tumors to be myomas situated in the mucosa and originating from the muscularis mucosae.

Case of Circumscribed Myositis Ossificans in Brachial Muscle.—A round, hard tumor, without tenderness, proximal to the elbow fold was noted in Arnell and Ruben's patient one month after injury to the elbow. Roentgen-ray examination revealed a calcified area, the size of a hen's egg, which was diagnosed as an ossified hematoma in the brachial muscle. Three months after the injury the tumor began to decrease in size and the bony structure became pronounced. Treatment consisted in massage and exercise during the first month after the accident, after which the patient was able to work. After seven and a half months the elbow function was completely restored and the osteoma was smaller. A month later it was still further reduced in size and of discus shape.

Differential Diagnosis of Glycosurias.—In seven healthy or convalescent subjects, three patients with glycosuria with normal fasting blood sugar value from the start, and two patients with diabetes with remission, Åkerrén found the fasting blood sugar value normal during and after a special diet consisting of the usual mixed diet with at least 400 Gm. of bread and at least 100 Gm. of sugar daily (the sugar in the usual food not included). He says that examination along these lines may be considered a function test of the carbohydrate metabolism of the organism. A patient with glycosuria who maintains a normal fasting blood sugar value under this forced carbohydrate intake shows complete carbohydrate tolerance and may be regarded essentially as a normal organism with respect to carbohydrate metabolism.

Case of Massive Properitoneal Cyst in Anterior Abdominal Wall.—In a woman, aged 29, who had had a tuberculous disease of the foot in childhood, now completely healed, and steady enlargement of the abdomen during the last two years, with feeling of oppression, operation disclosed a thin-walled, flaccid, properitoneal cyst of the extent of the entire abdominal cavity. Tuberculosis was not demonstrable in the wall of the cyst. Utterström believes that the cyst developed from a formation in the median vesico-umbilical ligament and is inclined to regard it as originating from a urachal remnant. Bergstrand presents the results of his microscopic examination.

Tissue Reaction on Retention of Iodized Oil in Lungs of Rabbits.—Grill and Kling studied the tissue reaction in the lungs in a series of six rabbits up to six months after the injection into the lungs of 1 cc. of iodized oil. Microscopic examination showed the iodized oil to be chiefly in the small bronchi, blocking them and causing partial atelectasis, which in the authors' opinion predisposes to inflammatory processes and constitutes one of the dangers in the introduction of iodized oil into the air passages for diagnostic or therapeutic purposes.

Effect of Roentgen Irradiation on Cultures of Chicken Fibroblasts and Peyton-Rous' Chicken Sarcoma Cultivated in Vitro.—In Santesson's nine series of chicken fibroblast cultures, at least 40 days old, roentgen irradiation caused a definite arrest in growth in all cases after transfer, the more marked the higher the dose, and most marked in the second culture period. In experiments with Peyton-Rous' chicken sarcoma the effect was most marked in the fourth or fifth passage, the more marked the greater the dose, but in all the series these cultures could be carried farther (now six months). There was a definite latent period both in fibroblast and sarcoma cultures. No certain stimulating effect was seen. This is a preliminary report.

Genesis of Tumors and Allied Formations: I. Amphigony, Autogamy and Parthenogenesis.—In this first part of Bosæus' work on the possible relation of reproduction to tumor formation in vertebrates, he deals with the authentic cases of self-fertilization and parthenogenesis in fishes and amphibia and with formations discovered in all vertebrates. He describes the results of pathologic parthenogenesis due to parthenogenetic development induced experimentally in ova of certain amphibia, with development of the resulting embryos in their own mother organisms.